

AMERICAN BIRLEMAN

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"In this volume we, the riflemen of America, may reap the benefit."

With these words, Lt. Col. Julian Hatcher, well known Ordnance technician, shooter and firearms author, closed his introduction of Phil Sharp's new book—"The Rifle in America."

About the author, Colonel Hatcher says: "In Phil Sharp we have the ideal combination—a firearms enthusiast, technician, shooter, hobbyist and prolific writer."

About the book: "It is a marvelous thing for the man who is interested in rifles, or their ammunition, or their many accessories, or all of them, to find collected together in one volume all that he might want to know about any of the ramifications of this most interesting subject."

Of course, the very fact that such a broad subject is covered in one volume—and covered from the viewpoint of the layman—makes Phil Sharp's book disappointing perhaps to the technically minded collector. But for those whose interests are as broad as this subject, Sharp's volume provides an interesting, authentic and otherwise unavailable history of the development of the rifle in America. Like all the other books we sell, you can buy this 600 page volume with the privilege of returning it within five days if you think the book is not worth the price. It costs \$7.50, postpaid.

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MUNHALL SETS THE PACE Shooting *WINCHESTER*

TRADE MARK

**High School Shooters
of Munhall, Pa.,
Win Many N. R. A.
Junior Postal Matches
with Model 52
and EZXS**



Munhall's 1938 N.R.A. National Junior Girls' Team Champions

Marjorie Stille, Dorothy Braddock, Irene Ladic, Mary Louise Reich, June Hunker.

Coaches for Munhall: T. T. Charlton, Margaret Markey and J. Solon Wilson.

Munhall's 1937-38 N.R.A. National Bi-Weekly Junior Championship Team

Left to right: William Skyrnes, Zella Wilkin-son, Bert Schuchman, Irene Ladic, Marjorie Stille, June Hunker, Mary Louise Reich, Mar- rion Rowell, Martha Lloyd, Dorothy Braddock.



SHOOTING in the same remarkable winning form which carried them to two National Team Championships and a National Individual Championship in last year's N.R.A. Junior Postal Matches, the Munhall, Pa., High School small-bore shooters are again going to town, with bells on! Up to March 1, in the N.R.A. 1938-39 Bi-Weekly Junior Team Matches they had turned in seven perfect team scores of 500 x 500 for the seven successive matches shot—total, 3500 x 3500! All members shooting Winchester Model 52 Rifles and Winchester EZXS Cartridges.

In the 1937-38 National Bi-Weekly Junior Team Matches—153 teams competing—Munhall swept through the two series, respectively four matches and six, with the sizzling-hot total of 4995 x 5000! Winning First for Division A in each series and First in the Aggregate of both. They collected three National Championship trophies and ten medals—all that were offered for these matches. All members shot Model 52 and EZXS.

Grooved for more of the same success, in the N. R. A. 1938 Postal Junior Team Championship, shot in March, the Munhall girls team won First in the Girls' Division with 998 x 1000! That brought them the David Trophy and six medals. Incidentally, their score overtopped those of the winning teams in the four other divisions: American Legion Post Jr. Clubs—Quincy, Ill., 997; Military Schools—Culver, Ind., 995; Boys' High Schools—Upper Darby, Pa., 994; N.R.A. Junior Clubs—Iowa City, Iowa, 985. All five Munhall girls shot Winchester Model 52 and EZXS.

And Munhall girls won First, Second and Third in the Girls' Division in the N.R.A. 1938 Individual Scholastic Championship: First, Irene Ladic, 499 x 500 tying the winner in the Boys' Division. Second, Martha Lloyd, 499 x 500. Third, Marjorie Stille, 499 x 500. All used Model 52 and EZXS.

Write today for folder on Model 52 Rifle and the 44-page Winchester Ammunition book—FREE.

WINCHESTER REPEATING ARMS COMPANY, NEW HAVEN, CONN., U.S.A.
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THE AMERICAN RIFLEMAN

COMING

VOLUME 87

APRIL 1939

NUMBER 4

CLEANING FIRED CARTRIDGE CASES by the time-honored chemical method has always been a messy, distasteful business; so much so that some shooters just won't do it, regardless of its theoretical virtues. J. E. Collingwood, of Topeka, Kansas, has developed a simpler and easier way of cleaning his cases, which apparently does the work. He calls it "dry-cleaning," and has sent us an interesting, illustrated little article describing the method, and the equipment used. The latter can be easily and inexpensively constructed by anyone possessing a few simple tools and just average mechanical ability. One of the virtues of the Collingwood method is that it "works while you sleep"—or at least while you are doing something else, and thus saves time.

We have on hand for early publication an article on scope sights by William Wait, Jr., of Drexel Hill, Pennsylvania. It has to do with the matter of magnification, or power, of scope sights, and is based upon extensive experience. Mr. Wait knows definitely now the power of scope that is best for him, and his findings should be of interest to others.

Slated for an early issue is an article by Walter Roper on double-action revolver shooting, a subject which is becoming increasingly interesting. This article is in addition to Roper's regular monthly department THIS HANDGUN GAME. Roper hesitated to write this article for us because it includes a discussion of special grips for double-action shooting, and as he does a side-line business in special handgun grips, he feared the article might be taken by some as a boost for his business. We asked him to write the article nevertheless, and leave to us the responsibility of any misunderstanding regarding it. For were we to refuse to publish an article just because a few persons might brand it as "commercial," our readers would be denied much interesting and useful information. We have but one purpose in publishing this magazine: to serve the best interests of our readers; and we try to bow to that line, and let the chips fall where they will.

CONTENTS

COVER PHOTO

Shows a young shooter receiving instruction in the Junior School at Camp Perry.

| | |
|--|----|
| POWDER SMOKE | 4 |
| THE BACK POSITION By CAPT. E. H. ROBINSON | 5 |
| SOMETHING NEW IN PISTOL RANGES By BILL SHADEL | 8 |
| BULLET-FIT By P. H. MANLY | 9 |
| AMERICAN SCOPE SIGHTS By F. C. NESS | 10 |
| PISTOL MACHINE REST By WILLIAM H. LUX | 14 |
| CLASSIFICATION TO FEATURE 1939 TOURNAMENTS | 18 |
| THE OLD COACH'S CORNER | 21 |
| THE AMATEUR'S CHANCE By RAY CARVER | 22 |
| TWIST AND BULLET SHAPE By BERT POPOWSKI | 23 |
| THIS HANDGUN GAME By WALTER F. ROPER | 26 |
| THE WRECKERS By A. CLUBMEMBER | 28 |
| MORE ABOUT THE 86 By W. JOSEPH O'CONNOR | 30 |
| AT LAST! By DAVID H. DAWSON | 32 |
| OVER THE NEWS DESK | 37 |
| DOPE BAG | 45 |
| ARMS CHEST | 50 |

PUBLISHED BY THE NATIONAL RIFLE ASSOCIATION OF AMERICA

OFFICERS OF THE ASSOCIATION: COL. L. W. T. WALLER, JR., President; COL. N. C. NASH, JR., Vice-President; MAJ.-GEN. M. A. RECKORD, Executive Vice-President; C. B. LISTER, Secretary-Treasurer and Managing Editor, THE AMERICAN RIFLEMAN. STAFF OF THE ASSOCIATION: L. J. HATHAWAY, Editor, THE AMERICAN RIFLEMAN; F. C. NESS, Associate Editor and Technical Division; W. F. SHADEL, Associate Editor and Public Relations; F. A. MOULTON, Advertising Manager; H. H. GOEBEL, Club Service and Junior Division; L. Q. BRADLEY, Membership and Circulation; F. M. HAKENJOS, Extension; F. L. WYMAN, Competitions

Published monthly by the National Rifle Association of America, 1600 Rhode Island Avenue, Washington, D. C. Domestic rates, including North, South and Central America, \$3.00 a year; \$5.00 for two years; elsewhere, \$3.60 a year; \$6.50 for two years. Entered as second-class matter, April 1, 1908, at the Post Office at Washington, D. C., under Act of March 3, 1879. Copyright, 1939, by the National Rifle Association of America. Thirty days' notice required for change of address. Unless otherwise requested, new subscriptions are entered to begin with the issue following the month in which subscription is received.

POWDER SMOKE

MERCHANDISING

"BUILD a better mousetrap and the world will beat a pathway to your door" is an old copy-book axiom which is no longer true.

Modern competitive methods have, unfortunately, changed the picture. A good product is no longer the sole essential to success. Carefully planned national advertising; adequate local distribution; trained, courteous salesmen; local advertising tied in with the national campaign, are all indispensable.

Too few rifle and pistol men realize that the continued existence of their sport, and the success of their local club, depend upon modern merchandising methods. They naturally view their shooting as a *sport* that others should follow because it is a *good* sport.

As a matter of fact, if the number of shooters is to be increased, the game *must* be viewed as a commodity offered in a highly competitive market. Baseball, bowling, boating, swimming—all the sports in which men and women may engage, are competitive "products." They are well advertised, and they are being "sold" by well-organized, experienced organizations.

We may believe that in the shooting game we have a better product, but we must convince the public of that fact or they will use a "competitive product"; they will play some other game.

To have a good product a good sport is not enough. It must be put up in an attractive package. The packages must be of the right size and design to appeal to the tastes of the various groups of prospective customers. A variety of matches, some for each grade of shooting ability and each type of shooting interest, are the "packages" in our merchandising problem.

But attractive packages are not all that is needed. As in the early days of the sewing machine, the automobile, and the electric ice box, we must teach people to *use* our product in such a way as to derive the maximum benefit and satisfaction from it. If a woman buys a sewing machine and has trouble trying to run it, she will be discouraged and feel that she has been sold a "lemon." If the salesman sees to it that the purchaser receives proper instruction, the sewing machine will become a source of

pleasure, satisfaction, and profit. Precisely the same situation prevails in our efforts to sell shooting. Newcomers on our ranges must be *welcomed* as prospective customers—not merely *tolerated* as visitors. They must be made to believe that they can get started and have a lot of fun with inexpensive equipment—for they can do just this, you know, in those other sports which constitute our principal competitors! And this will not be misleading "sales talk" if the local club has followed the classification plan now available in the national program.

But educational selling is not enough. Prospects must be *interested* in the game through advertising and publicity. Newspaper, radio, and magazine advertising must be used in a nationally directed campaign, with which local units "tie-in" their own efforts. And these "local stores"—the local club ranges—must be attractive, friendly places. If you become interested in some product, and look up a local store which sells it, you will walk out in a huff if the people running the store try to "high-hat" you. You will not go back into that store, and you probably will buy some competing product. The newcomer at your local range feels the same way. He is interested, or he would not take the trouble to look you up. He is doing you a favor by investigating your "merchandise." He cannot be blamed if he resents a lack of interest or "high-hat" attitude on the part of your club officers—the fellows who are "running the store."

Rifle-and-pistol shooting now has everything needed to sell it to the American people. It is a *good* product—equal to any, better than most. It is attractively packaged with its variety of qualification and match courses. It is "priced right," with benefits within the reach of all, as a result of the National Classification system described in this issue of the *RIFLEMAN*. It has an able, experienced national organization to plan, direct, and persistently carry on a national sales campaign which will cause prospects to want to look up their local "stores."

You have the local store. People *will* "buy our product"—will take up shooting as a sport, but it is up to you to close the sale!

THE AMERICAN RIFLEMAN

VOL. 87

APRIL 1939

NO. 4

THE BACK POSITION

By CAPT. E. H. ROBINSON

THE PUBLICATION in the December, 1938, number of THE AMERICAN RIFLEMAN of three out of a set of four cartoons depicting supposed national positions, will have reminded some old timers that the best American long range shots at one time lay on their backs, resting the rifle on the inside of the thigh.

The back position is the most steady of all, and results in experimental work are at least as good as any that can be obtained with a wrist rest; and the back position is only beaten in point of accuracy by a really good mechanical rest such as the six point. It is rather amazing that it seems to have fallen out of favor with all but some sixty or seventy Britons who shoot at Bisley and on the Cambridge University Range in competitions from 900 to 1,200 yards.

The position was at one time very popular in Great Britain and was, indeed, for many years the only one used in competitions beyond two hundred yards at which range standing was the rule.

Known as the "American" position because it was supposed to have originated in the United States, the back stance was objected to by the military authorities, and ultimately the National Rifle Association (Great Britain) said that it was only to be used at distances greater than 600 yards unless the rules specially allowed "any position."

Whether the back position was an American invention it is difficult now to say. The first known mention of lying on the back to shoot is in the "History of the War

in America between Great Britain and Her Colonies" published in Dublin in 1785. This book contains many references to the excellence of American marksmanship and tells of a British officer, Lieut.-Colonel Ferguson, who is said to have outdone "even the American Indians in the adroitness and quickness of firing and loading and in the certainty of hitting the mark lying upon the back, or belly, and every other possible position of the body."

Except for isolated men like the gallant Colonel Ferguson, the British soldiers did not seem to be particularly good marksmen and the British government recruited Jägers and sent them to America to give the "rebellious colonials" a taste of what it is like to be at the wrong end of a well held rifle. Remember that in those days the rifle was not yet considered to be an efficient military weapon, though as a result of the American experiences War Offices were beginning to open their eyes to the fact that people like the Jägers might be worth their salt. At any rate, the British formed that famous regiment, The Rifle Brigade, in 1800 and it is interesting to learn that in the Peninsular War of 1809 the back position was freely used by men of this regiment. The position seems to have died out, probably because it could not be assumed by a soldier with a pack on his back.

In British rifle shooting history it comes into prominence again in the early 1870's. When an Irish team went to shoot against the United States at Creedmoor in September, 1874, the Irish had been experimenting with the back

*The back sight is fitted at the extreme end of the rifle butt, and is extra long to allow for the drop of the butt.
This man pulls the trigger with his middle finger*





position, but do not seem to have made much of it. They were therefore rather astonished to find that the United States men, who were supposed to know little or nothing about long range shooting, had made themselves expert in the back position and at 800, 900 and 1,000 yards beat the visitors by three points after a very fine fight. For some years after that there was great activity in international matches, and the Palma Trophy was donated by the United States. Unfortunately these matches have died out, but may yet be revived.

The Irish returned from the United States full of new ideas, the most important of which was that it was essential to turn yourself as far as possible into a human fixed rest. From that time the back position in all its many varieties was extensively developed in Great Britain. Now, as I have said, there are only between sixty and seventy men who use it among Britons, and they are probably the only people in the world who practice it.

At left—top: Front view showing simple lens foresight as used by British marksmen. At left—bottom: The back position puts considerable strain on the neck. Many men use a stay around waist, to the end of which a rubber ring is fixed. The ring is gripped in the teeth, and relieves the strain on the neck. Others, whose teeth are not so good, wear a head-dress, as shown here, to which the waist strap is fixed.

Below, on this page: Competitors at Bisley shooting in long-range events with the "Match Rifle," which latter is a specialty of the British and consists of a stripped barrel with no support forward of the action. The fore-end is used only for resting the rifle on the leg.

The British Match Rifle shot uses a simple telescopic sight consisting of a front lens, on which is pasted a black paper ring, and a reducing backsight. It needs no description as it is clearly shown in the photographs. Its usual magnification is X2. It is more than likely that this simple telescopic sight will disappear in the near future. The British War Office is very interested in telescopic sights and the match rifle men have been experimenting. One of the most important prizes at Bisley last year was won by a competitor (an Irishman) using a true telescopic sight and shooting in the prone position. Another competitor had ingeniously adapted the true telescope for shooting in the back position. Many more true telescopes will be used in 1939, and from this interest two important developments are expected.

One is that many new competitors will be attracted to the long range match rifle game, and the other is that as it is easier to fit the true telescopic sight for prone shooting than for use in the back position the latter position may be abandoned by all save the old men who cannot now successfully shoot prone. We have in this country one prominent marksman, now in his eighty-third year, who still wins good prizes in the back position, but he can certainly no longer shoot prone.

Just one more point about our match rifle events: We use a boat tailed bullet in the service case, and a nitro-cellulose powder charge giving a muzzle velocity of something over 2,600 foot seconds for a pressure a little in excess of those for the normal service cartridge. Both bullets weigh 175 grains.



Something New in Pistol Ranges

By BILL SHADEL

A BANK OF thirty targets on a line, mounted on a track and receding by motor-power to 25 or 50 yards, and then coming up like a line of soldiers to the firing-point for inspection and marking, is the greatest stride in the development of pistol shooting as a gallery spectacle that this observer has ever dreamed of."

That is the comment of a nationally known sports writer upon his first view of this unique device.

It seems no exaggeration to say this innovation in range construction is the most revolutionary step that has been taken for the target shooting game in the past decade—that's the comment we heard all over the range as we dropped in on the second Flamingo pistol tournament in progress at the Coral Gables (Fla.) Palmetto Pistol Club range. From target-shooting experts who should know—Mark Wheeler of Los Angeles, Sgt. Marvin Driver of the Detroit Police team, Charles Askins, Jr., Lee Echols, Sgt. "Red" Cruze, Smitty Brown, promoter of Tampa's national mid-winters, Frank Wyman of the N. R. A.—enthusiastic praise was unstinted as this beaming correspondent approached each in turn to get his opinion. And to get these seasoned veterans who have shot on practically every kind of range under all conditions to wax eloquent on something new in pistol shooting is testimonial enough.

If it pleased the competitors—a galaxy of stars including a dozen of those whose names appear in the top national rankings announced for the 1938 season, that meets the first requirement. There is another and probably more far-reaching angle to it all, however, and that is the possibility of, for the first time, definite spectator appeal for this sport of ours. And when once a spectator is attracted to a firing line, therein lies a potential admirer of the game and eventual competitor. Now the spectator can watch his favorite fire his string of five or ten shots, and immediately have that target, along with those of all other competitors on the line, come up to the line, marching as a

platoon front to face the point from which they were so recently riddled.

The entire range is located in a picturesque setting of palm trees with an attractive club house, lounge, sandwich and soft-drink bar, parking space, sodded lawn and cinder paths, highly colored firing-line canopy, range officer's stand and modern plumbing completing the ensemble. Not an apparent trick has been passed up. Electrical connections for lighting and power have been made available although the range is some two miles beyond the area of settlement. An intercommunication system between the statistical office, range officer's stand and the club-house lounge, with public address system along the firing line, facilitates tournament handling. But it is the arrangement of targets which interests us most.

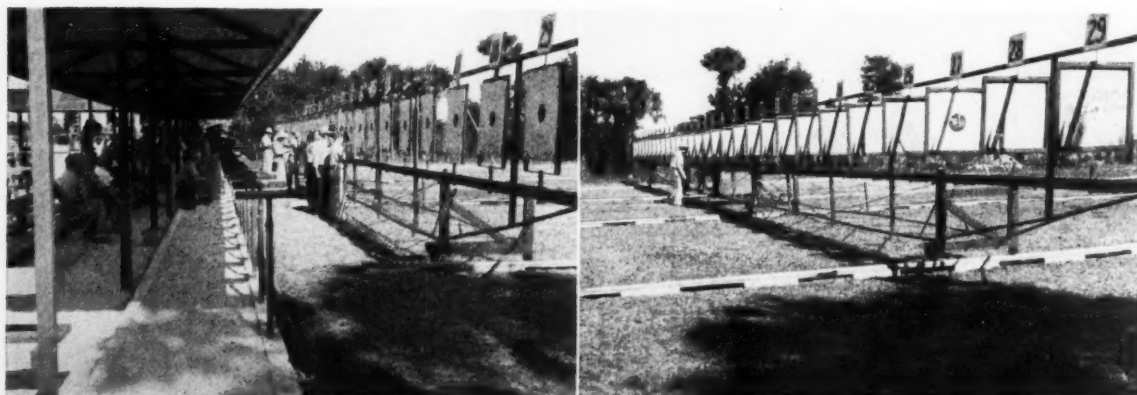
The string of thirty target frames, all joined together in a solid framework, is mounted on wheels. These wheels in turn play upon four rails, separated by distances of probably seven or eight yards, which run from the firing line to a point fifty yards distant. The weight of the entire framework is thus divided among these four rails, the two wheels fore and aft of each supporting longitudinal truck moving easily along this guided path.

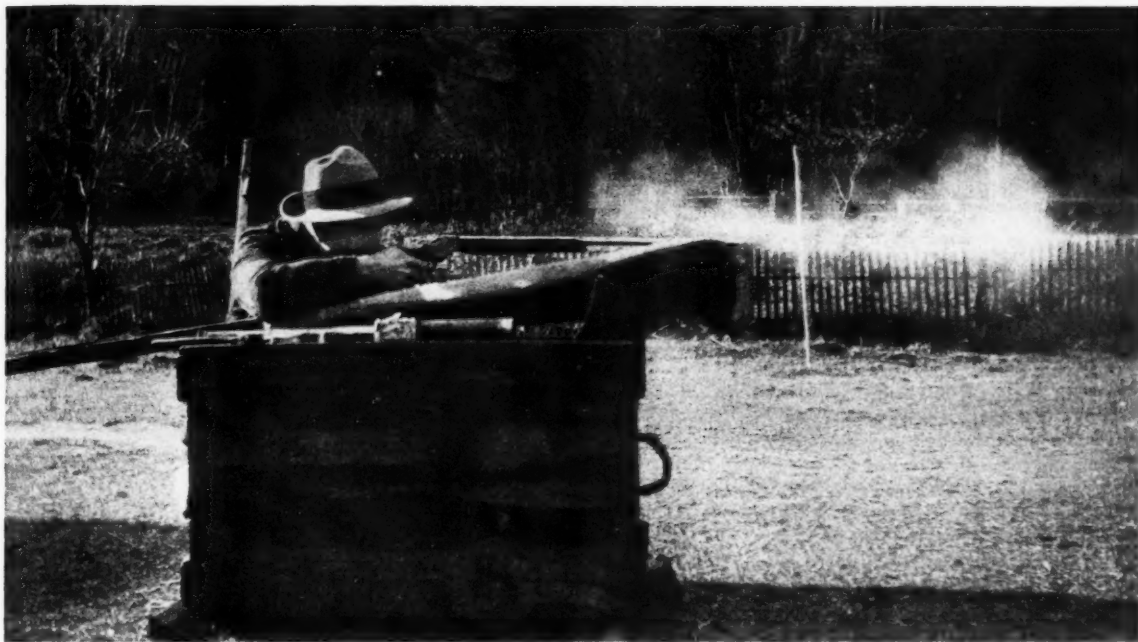
These mounted trucks are rectangular in shape and constructed of four by four timber. From each of these trucks a network of cable, wire and steel bracing extend to the wooden frames on which the swinging targets are mounted. The entire mobile unit is complete in itself, having the mechanism which turns the targets, face or edge to the firing line, mounted within this horizontal framework which resembles an overhead crane.

The entire unit is moved by means of a two horse power electric motor, which, by the use of a cable strung over pulleys at each end of the fifty-yard course of fire, pulls the unit along at a pace faster than a man can walk. The targets are thus moved to a distance fifteen, twenty-five, or fifty yards from the firing line and returned with

(Continued on page 27)

Views of the traveling target carrier in two positions





Bench-rest shooting back in homestead days

BULLET-FIT

By P. H. MANLY

THIS IS NOT BEING WRITTEN to broadcast anything particularly new, but rather in an effort to learn (if anyone can tell me definitely) just how tightly or loosely bullets should fit rifle barrels in order to shoot with superior accuracy. So many tools, gadgets, and attachments have been made and used for the resizing of bullets—cast lead ones especially, that this operation is considered by most shooters as being necessary in the proper reloading of ball cartridges. Of course quite a few different opinions are held as to how and when this bullet-resizing should be done: whether the bullets should be dry, oiled or otherwise lubricated when put through the die; sized base or point first, etc. I have shot round, short, and long bullets, with sharp, flat, oval, round, and blunt points, but I have not yet been able to decide just how tightly or loosely a bullet should fit the bore.

Sure, I usually resize my lead bullets—at least I put them through the sizing die. In the process some bullets, from one mould, get their diameter cut down quite a bit, while others, from a different mould, just have the lubricant pressed into the grooves a little more firmly, and the surplus wiped off. And I have three sizing dies in .311 alone, all made by the same company—and each is a little different in diameter from the others. All shooters consider it necessary that a bullet seal the bore against all gas leakage; yet is this entirely necessary, and is a little powder-gas leakage any great drawback? Really, doesn't more or less gas get by when most fixed ammunition is fired? Does not the gas pressure expand the shell, and some gas slip up the bore ahead of the bullet, before the pressure has overcome the inertia of the bullet and driven the latter into the bore far enough to form a positive gas seal? Of course no gas would

escape up the bore if the bullet were seated ahead of the shell, or ram-rodged down from the muzzle as in the old Pope style. Probably the .22 rim-fires do not leak gas, especially with lubricated bullets, as the lubricant helps to make a seal in the tight chamber; and .22 bullets are on the tip-ends of the shells, anyway. Yet, to date, the only reason I have heard given as to why a first-class .22-caliber target rifle will shoot one or two brands of ammunition accurately, and all others indifferently, is that of a slight difference in bore diameter changing the "bullet-fit." How many shooters have fine gauges, mikes, and other precision measuring instruments to prove that a certain bullet-fit is the thing necessary for accuracy? Something more than a shooter's mere belief—like some of my own pet theories that went up in smoke and proved to be mere illusions when tried out in a string of shots.

I received my first jolt about bullet-fit in 1906 after having just bought a new Winchester Single Shot rifle in a popular .32 caliber. I had recently moved onto a homestead in the woods, and for a place to shoot I swamped a 200-yard range from the back end of my woodshed. I made a bench rest and a crude machine rest, and then started experimenting. The first ten-shot group, machine rest, was an average, the groups being about 8 inches across, and hollow in the center. This surely jarred me, as I wished to use this rifle at turkey shoots, and a load that avoided the center so well would only make turkey-shoot entries a donation and bill of expense.

The only thing that I could think of that might improve the groups was a change in bullet-fit. The Perfection mould made the bullets plenty oversize, so I had the Ideal people send me a new sizing die. The groups shrunk at once, the

(Continued on page 34)

AMERICAN SCOPE SIGHTS

By F. C. NESS

THERE ARE NOW so many scope sights made within the boundaries of the United States, that an intelligent selection has become a problem. Because of this situation we have put a selected lot of our too-many scopes through a uniform test as the basis for a report to our readers which we hope will enable them to see these standard models through our eyes. Our vision has been recently tested and found to be normal. Before testing the optical properties of any scope, we first carefully adjust that instrument to our own vision. We have included in the test the better or more practical models, and several new ones. Among the latter are three new high-power target scopes, a variable-power low-cost scope, and four new hunting scopes.

For practically judging the definition and resolving power, we use our lithographed Scope-Test target at 100 yards in even daylight. That is, we select cloudless days or consistently overcast periods for our comparison tests. To insure as uniform illumination as is possible, we put through all the scopes of the same class at very nearly the same time. Rechecks have proven this procedure to be practical as an assurance of uniformity of conditions, and identical results have been obtained at the end of the test period and at the beginning of that period, with the same instrument.

Our Scope-Test target (see cut) is also a sighting target, practical for all scopes and metal sights. The white aiming-cross and white scoring-center together are almost perfect for the exact and uniform alignment of any cross-hairs, from the finest to the coarsest. Other features adapt the target for accurate aim with post reticules, with open-sights and beads, and with the apertures of metallic target-sights. The heavy black sections, which also represent horizontal and vertical crow targets for our varmint rifles, are fine for checking the definition of scopes. The small "cogs," which form the periphery of the individual circular aiming bulls, are of graduated sizes, one size for each of the four segments of each bull, and were designed for testing the resolving power of scopes.

There is a big 9-inch bull in the center of each target, for 200 yards or for the coarser sights at 100 yards. Surrounding it are several smaller bulls of identical design and pattern but in half-size for 100 yards with the finer sights, or for 200 yards with those high-power target scopes which have the finest cross-hair reticules. We have consistently used this Scope-Test target for all of our group-shooting with all types of sights, for more than a year now, and have found it to be satisfactory in every respect. For testing the optical qualities of all kinds of scope sights, it has proven as satisfactory. The circumferential cogs, designed for checking resolving power, are proportioned and spaced 1-inch, $\frac{1}{2}$ -inch, $\frac{1}{4}$ -inch, and $\frac{1}{8}$ -inch, on the four segments of the 9-inch bull, and $\frac{1}{2}$ -inch, $\frac{1}{4}$ -inch, $\frac{1}{8}$ -inch, and $\frac{1}{16}$ -inch, on the $4\frac{1}{2}$ -inch bull.

The limitation of resolution (the distinct separation of the smallest and closest contrasting objects in the image, possible to a given instrument under normal light conditions when its lenses and optical system are perfect and in perfect adjustment) for a $1\frac{1}{2}$ -inch 15X with a 37-mm. objective lens (1.435 inches) is .06 minute of angle, or about $\frac{1}{16}$ -inch at 100 yards. Therefore, even a good scope of high-power type must have a large objective lens to resolve or distinctly separate the smallest ($\frac{1}{16}$ -inch) cogs on our smaller Scope-Test bull at 100 yards. In fact, we,

found only five sighting scopes which would do this in the centers of their fields of view, and only three of these five would resolve all cogs of all bulls on the target throughout their fields of view, or of all such bulls as appeared on their images at one time.

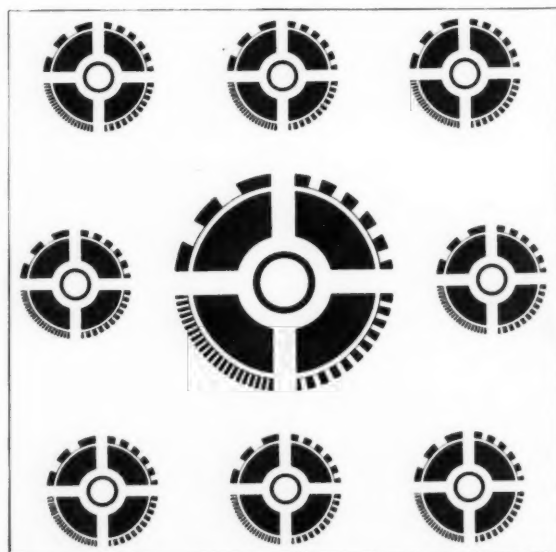
These three instruments which were found to have the best resolving power of the twenty-odd compared in our tests, were: the Lyman 15X Super-Targetspot with 35-mm. objective lens, the Pechar 15X with 37-mm. objective, and the Murrey 12.5X with 39-mm. objective. The two others which resolved $\frac{1}{16}$ -inch at 100 yards on one bull at a time were the Unertl 10X with 32.5-mm. objective, and the Pechar 10X with 30-mm. objective.* To get a more discriminating classification, we have merely to double the test range, of course. On the other hand, only one scope failed to register a resolution rating on even the largest cogs (1-inch) of our 9-inch Scope-Test bull. That one was the new Weaver 1X which has no magnification. Such inferior resolving power can be adequately compared with that of the others by halving the test range, of course.

The two Pechar scopes were probably early samples, and below Pechar standard. The Murrey sample was a pilot model, which will presumably be corrected, and in spite of its fine resolving power (as indicated above), it will probably be improved. Apparently this sample had been imperfectly assembled or became maladjusted in transit, because the definition was only fair, while appreciable astigmatism indicated that at least one lens was under strain. As a consequence, the sample had to be returned, and we can judge fairly only its physical dimensions. New diaphragms, evidently necessary in this instrument, may change its optical properties appreciably.

The two Pechar samples were also defective in definition, though fine as to resolving power, and the poorer of the two was returned for improvement up to the current Pechar standard. We had no parallax in these two Pechars, and

* NOTE: Later we found that the $1\frac{1}{8}$ -inch Fecker 8X would also resolve $\frac{1}{16}$ minute.

The scope-test target, reduced



we obtained fine accuracy with them, but there was a slight fogging of the image which made their definition imperfect. Physical dimensions were standard.

We also had two new Noske samples, which must be judged as individual instruments representative only of the first lot of new scopes. Subsequent lots of Noske A-type scopes will have longer eye relief or greater magnification, or a bit of both. The new Weaver 1X is an experimental model intended for autoloading rifles and shotguns. Only a small lot has been made. The new 330 Weaver is also representative only of the current lot and not of subsequent issues, because further improvements in Weaver optics are under way at this time. The other subjects of our comparison test are old samples which we have had on hand for some time, and they are apparently up to standard, with one or two possible exceptions. That is, we think we have seen optically better samples than our own of the Lyman Alaskan, one Unertl 3X and the three Belding & Mull scopes.

Now, with all that explanation as a preliminary, we shall proceed with our cold analysis and description of each instrument, and let the reader make his own choice according to his individual requirements. For testing field of view we used a 100-yard firing range and a tape measure. For checking weights we used a postal scale. For physical dimensions we used a millimeter scale and an inch rule. Our own figures are therefore only approximate, but they are fair to all makes, and sufficiently accurate, we think.

NEW NOSKE 4A.—About $3\frac{3}{4}$ power. Weight, 11 ounces without mounts. Overall, 10 inches. Tube diameter, $\frac{7}{8}$ -inch (22-mm.). Mount leeway along smooth and parallel extent of tube, $3\frac{1}{2}$ inches. Eye relief, $4\frac{3}{4}$ inches (minimum, $3\frac{1}{4}$ inches). Objective, $\frac{3}{4}$ -inch (19-mm.). Exit pupil, 5-mm. Field per 100 yards, 23 feet. Post-flat, subtends $2\frac{1}{4}$ minutes. Parallax, $2\frac{1}{8}$ minutes. Definition, good (clear without color). Resolution, $\frac{1}{4}$ -minute (clearly resolves .250-inch alternate black and white objects at 100 yards in normal daylight). Remarks: Image moves with eye at edge of field at best focus, and top of post jumps slightly. That is, it shimmers vertically.

NEW NOSKE $2\frac{1}{2}$ A.—About $2\frac{1}{2}$ power. Weight, 10 ounces. Overall, 10 inches. Tube diameter, $\frac{7}{8}$ -inch (22-mm.). Mount leeway, $3\frac{1}{2}$ inches. Eye relief, 5 inches (minimum, 3 inches). Objective, $\frac{3}{4}$ -inch (19-mm.). Exit pupil, 7-mm. Field, 39 feet. Post-flat, $4\frac{1}{2}$ minutes. Parallax, $1\frac{1}{2}$ minutes. Definition, good. Resolution, $\frac{1}{2}$ -minute. Remarks: Same as for Noske 4A.

Both Noske models have internal windage and elevation adjustments by means of easily controlled, large, flat, external screws, edge-notched in minute-of-angle serrations, and both locked and sealed with steel protection-caps screwed on. The elevation dial has an auxiliary elevation plate calibrated for any one of several popular standard cartridges up to 1000 yards. Extra plates, required for each different load, are available, as well as special calibrations for special loads. Both Noske scopes have threaded eye ends for individual eye focus, and threaded objective cells for range focus and removal of parallax. Both adjustments have locking collars.

NEW WEAVER 330.—About $2\frac{3}{4}$ power. Weight, 11 ounces with Type-B mounts (mounts $3\frac{1}{2}$ ounces). Overall, 11 inches. Tube diameter, $\frac{3}{4}$ -inch (19-mm.). Mount leeway, $3\frac{1}{4}$ inches. Eye relief, 5 inches (minimum, 3 inches). Objective, .62-inch (16-mm.). Exit pupil, 9-mm. Field, 33 feet. Post-flat, $4\frac{1}{8}$ minutes. Parallax, $1\frac{1}{2}$ minutes. Definition, good. Resolution, $\frac{1}{2}$ minute. Remarks: All Weaver scopes have internal adjustments for elevation and windage by means of external graduated screws. Thumb screws (C-type) have springs giving click detents in $\frac{1}{4}$ minutes, and both are particularly vulnerable

to abuse. Slotted screws (S-type) are self-locking, require a screw-driver for zeroing the sight, and are well adapted for sporting use including the rigors of hunting. The Weaver 330 scopes have a narrow rim around their full field, which causes the latter to blend with the outside view, adapting these scopes for uses which require very quick aim.

FORMER 330 WEAVER.—About $2\frac{3}{4}$ power. Weight, $7\frac{1}{2}$ ounces. Overall, 11 inches. Tube, $\frac{3}{4}$ -inch (19-mm.). Mount leeway, $3\frac{3}{4}$ inches. Eye relief, 5 inches (minimum, 3 inches). Objective, .62-inch (16-mm.). Exit pupil, 9-mm. Field, $32\frac{1}{2}$ feet. Post-flat, $3\frac{1}{8}$ minutes. Parallax, 1 minute. Definition, fair (some lack of clarity). Resolution, $\frac{1}{2}$ minute. Remarks: All Weaver scopes have a threaded eye end for focus and removal of parallax. The housing can be loosened and moved slightly back or forth for further refinement of the adjustment when necessary.

440-C WEAVER.—About $3\frac{3}{4}$ power. Weight, 8 ounces without mounts. Overall, $11\frac{1}{2}$ inches. Mount leeway, $3\frac{1}{2}$ inches. Tube, $\frac{3}{4}$ -inch (19-mm.). Eye relief, $3\frac{1}{2}$ inches (minimum, $2\frac{1}{4}$ inches). Objective, .62-inch (16-mm.). Exit pupil, 6-mm. Field, 22 feet. Cross-hairs subtend $\frac{1}{2}$ minute. Parallax, none. Definition, fair (some annoying reflections handicap the viewer). Resolution, $\frac{1}{4}$ minute. Remarks: This 440 model and the cheaper 355 model (5X) are, apparently, the poorest scopes made by Weaver. Those we have seen were inferior optically.

NEW WEAVER IX.—Power, practically none. Weight, 9 ounces with Type-S mount (mount 3 ounces). Overall, $9\frac{1}{2}$ inches. Tube, $\frac{3}{4}$ -inch (19-mm.). Mount leeway, 3 inches. Eye relief, 6 inches (minimum, 4 inches). Objective, .62-inch (16-mm.). Exit pupil, 10-mm. Field, 66 feet. Cross-hairs, 7 minutes. Parallax, none. Definition, good. Resolution, 2 minutes ($1\frac{1}{4}$ minutes at 50 yards). Remarks: In all Weaver scopes the parallax was against the eye when it could not be adjusted out. In every scope, magnification of the field made it (the image of the target) move faster than the reticule (in the opposite direction, of course) when swung or moved to follow a moving object. This IX is least affected by such phenomena of magnifying scope sights. Because of this, and its wide field and long eye relief, it is well adapted for plinking purposes, for aerial targets or running game on autoloading rifles, and for flying game on shotguns. None of the Weaver scopes have enlarged ends.

LYMAN ALASKAN.—About $2\frac{1}{2}$ power. Weight, 15 ounces in Noske mount (mount about 7 ounces). Overall, 11 inches. Tube, $\frac{7}{8}$ -inch (22-mm.). Mount leeway, 4 inches. Eye relief, $4\frac{7}{8}$ inches (minimum, 3 inches). Objective, .70-inch (18-mm.). Exit pupil, 10-mm. Field, 39 feet. Post-flat, $3\frac{3}{4}$ minutes. Parallax, $\frac{7}{8}$ minute. Definition, good. Resolution, $\frac{3}{8}$ minute. Remarks: Internal adjustment for windage and elevation by convenient thumb screws which have graduated dials and are marked for proper direction. These are very practical zeroing adjustments, equipped with a screw lock and capable of registering zero after sighting-in the rifle. Like those of the Noske scopes, the Alaskan eye-end and ocular lenses are larger than the tube diameter. Like that of Weaver scopes, the Alaskan eye-end is threaded for individual focus.

UNERTL (FIXED RETICULE) 3X.—About 3 power. Weight, 12 ounces with Skardon Smith mounts (mounts about 2 ounces). Overall, 11 inches. Mount leeway, $3\frac{1}{8}$ inches. Tube, $\frac{7}{8}$ -inch (22-mm.). Eye relief, $3\frac{3}{4}$ inches (minimum $2\frac{1}{2}$ inches). Objective, $\frac{3}{4}$ -inch (19-mm.). Exit pupil, 8-mm. Field, 29 feet. Cross-hairs, 1 minute. Parallax, 1 minute vertical and $1\frac{1}{2}$ minutes horizontal wire. Definition, fair (not brilliant because of a trace of fog). Resolution, $\frac{3}{8}$ minute. Remarks: This

Unertl scope requires a completely adjustable mount. The eye-end is threaded for individual focus. There was no distortion and no color fringe.

UNERTL (WITH ELEVATION) 3X.—About 3 power. Weight, 10 ounces. Overall, 10½ inches. Mount leeway, 3 inches. Tube, ¾-inch (22 mm.). Eye relief, 3½ inches (minimum, 2¾ inches). Objective, ¾-inch (19-mm.). Exit pupil, 7-mm. Field, 27½ feet. Cross-hairs, 1 minute. Parallax, 1⅛ minutes. Definition, good (a trace of fog but brighter than preceding sample). Resolution, ¼ minute. Remarks: This Unertl with internal adjustment for elevation is adapted for any windage mount having clamps suitable for ¾-inch tube. The eye-end is threaded for vision focus, and the objective end is adjustable for range focus and removal of parallax. While its image was not as bright as that of the Lyman Alaskan, this Unertl had greater resolving power.

NEW CAROLYN VARIABLE-POWER.—Adjusted to about 4 power. Weight, 16 ounces. Overall, 15⅞ inches. Mount leeway, 2½ inches. Tube, ¾-inch (19-mm.). Exit pupil, 4-mm. Eye relief, 2⅜ inches (minimum, 1¾ inches). Objective, .69-inch (17-mm.). Field, 21½ feet. Cross-hairs, ½ minute. Parallax, none. Definition, very good. Resolution, ¼ minute. Remarks: This new scope is a finely finished low-cost scope, sold with or without target-type mounts similar to the Marlin (No. 2) steel mounts. It is the only cheap scope included here, because it is brand new. This scope has an enlarged eye-end, the clear aperture of the ocular lens being .78-inch (20-mm.).

The eye-end is graduated, and is turned for changing the magnification. The objective end is turned to correct the focus as the power is changed. We found the objective had to be given a total of 2¼ revolutions for the entire range of magnifications, from 4X to 8X. A fine little instrument, with good definition and resolving power, and no parallax at any power over our 100-yard range.

SAME CAROLYN VARIABLE-POWER.—Adjusted to about 8 power. All physical dimensions unchanged. Eye relief, 2⅜ inches (minimum, 1¾ inches). Exit pupil, 2-mm. Field, 12 feet. Cross-hairs, ¼ minute. Parallax, none. Definition, very good. Resolution, ⅛ minute. Remarks: Adjusted to 8 power this Carolyn scope equaled the resolving power of the 8X Jr. Targetspot and the 1-inch Unertl 6X.

BELDING & MULL HUNTER.—About 2½ power. Weight, 14 ounces with B. & M. mount (mount about 5 ounces). Overall, 12 inches. Mount leeway, 4 inches. Tube, 1⅜-inch (20-mm.). Eye relief, 3¼ inches (minimum, 2¼ inches). Objective, ⅝-inch (15-mm.). Exit pupil, 7-mm. Field, 39½ feet. Post-flat, 7½ minutes. Parallax, none. Definition, fairly good (not quite "good"). Resolution, ¼ minute. Remarks: This is an old scope of very smooth outline and without external housing, although it is internally adjustable for both windage and elevation, by means of slotted screws and a screw-driver. Its chief fault, if not its only defect, is the poor weather protection provided by its sliding-collar cover. It is adapted for any mount with or without adjustments, providing only that the clamps will take the B. & M. tube, which is 1⅜-inch in diameter. The reason for the broad post in this sample is its employment on our 12-gauge Savage trap-gun. With it we have run 35 straight from traps. A very fast sight.

BELDING & MULL MARKSMAN.—About 3 power. Weight, 20 ounces with necessary B. & M. TH-mount (mount about 9 ounces). Overall, 13 inches. Mount leeway, 1½ inches. Eye relief, 3⅜ inches (minimum, 2¼ inches). Objective, ⅝-inch (15.5-mm.). Exit pupil,

6-mm. Field, 39½ feet. Post-flat, 3¾ minutes. Parallax, none. Definition, good. Resolution, ⅜ minute. Remarks: This is a fixed and sealed instrument depending upon external adjustments of the TH-mount, which latter is available with micrometer click screws for windage and elevation.

This early American hunting scope is the first, and perhaps the only, rugged and practical hunting scope with range adjustments adequate for target shooting. There are flats on the 1⅜-inch tube under the flat-end adjusting screws of the mount. An integral lug on the middle of the tube engages a slot in the top truss of the B. & M. mount, which holds the scope in fixed position under heavy recoil. The eye-end is enlarged for a large ocular lens 1⅛ inches in diameter. The Marksman is focused for normal vision (or for abnormal eyes when the owner can be present) at the factory. For individual refinement of the focus or for the removal of any slight parallax which may remain, the tube covers must be removed, and the litharge-cement seals broken and subsequently replaced.

B. & M. TARGET SCOPE.—About 7 power. Weight, 24 ounces with the essential Belding & Mull Precision Knife-edge mounts (mounts about 8 ounces). Overall, 16½ inches. Mount leeway, ¾-inch. Tube, 1⅜-inch (20-mm.). Eye relief, 1¾ inches. Objective, .88-inch (22-mm.). Exit pupil, 4-mm. Field, 13¾ feet. Cross-hairs, ¼ minute. Parallax, none. Definition, good. Resolution, ⅛ minute. Remarks: This scope has a sleeve in the middle of the tube for changing the focus and automatically removing parallax for any range. In this respect it is very similar to the Fecker and Murrey target scopes, and unlike the Lyman, Unertl, and Pechar target scopes.

For the B. & M. Precision target mounts there is an integral, flat-sided block around the scope tube under the knife-edge of both mounts, which provides a mechanically accurate guide and fulcrum for the adjustments in both planes. The knife-edge plates, in turn, are pivoted and adjustable for an even and uniform contact with their respective blocks on the tube. Windage control is confined to the front mount and elevation control to the rear mount, which insures dependable straight-line adjustments in both planes. The adjusting screws have ¼-minute click detents.

NEW MURREY 1¼-INCH TARGET SCOPE.—About 12½ power. Weight, 24 ounces with Lyman mounts (mounts about 5½ ounces). Overall, 17½ inches. Mount leeway, 1¼ inches, front and rear. Tube, ¾-inch (19-mm.). Objective, 1.52 inches (39-mm.). Exit pupil, 2.5-mm. Eye relief, 2¼ inches. Cross-hairs, ⅝ minute (just over ¼ minute). Parallax, ½ minute in one wire, Field, 8 feet. Definition, fair (some color at all adjustments). Resolution, better than ⅛ minute in center and ⅜ minute throughout field. Remarks: This is, probably, not a representative sample of this make, optically, but only mechanically and physically. The focus sleeve is in the middle of the tube, similar in arrangement to the Fecker and B. & M. target scopes. The beveled locking collars are somewhat hard to operate. It is very short for a 1¼-inch scope, which feature many shooters will like if they have been concerned about having big objectives far out on the barrel.

NEW PECHAR 1½-INCH TARGET SCOPE.—Adjusted to about 15 power. Weight, 30 ounces with Pechar target mounts. Overall, 25 inches. Mount leeway, 6-inch rib. Tube, ¾-inch (19-mm.). Objective, 1.435 inches (37-mm.). Exit pupil, 2.5-mm. Eye relief, 2¼ inches. Cross-hairs, ⅛ minute. Parallax, none. Field, 5¼ feet. Definition, fair (a trace of fog). Resolution, better than

$\frac{1}{16}$ minute in center and $\frac{1}{16}$ minute throughout field. Remarks: This is our first sample of the Pechar, and we understand the optics have been improved since our two test-scopes were made. The Pechar target mounts were described in the October Dope Bag. They are of a new design. The outfit has consistently given us fine accuracy over the past several months. This scope is readily adjustable down to 10 power by a simple and convenient slide on the tube—a matter of seconds to one familiar with it.

NEW PECHAR $1\frac{1}{4}$ -INCH TARGET SCOPE.—About 10 power. Weight, 27 ounces with Pechar target mounts. Overall, 23 inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, 1.187 inches (30-mm.). Exit pupil, 3.5-mm. Eye relief, $2\frac{3}{8}$ inches. Cross-hairs, $\frac{3}{16}$ minute. Parallax, none. Field, $9\frac{1}{2}$ feet. Definition, fair (some hazy interference). Resolution, $\frac{1}{16}$ minute. Remarks: Same as above, except that this is not a variable-power, and it has not given us quite as good accuracy as the 15X Pechar. Both Pechars have a focusing sleeve at the objective end like the Lyman and Unertl target scopes, but with the added advantage of a click control in addition to the Pechar scale. Both instruments and mounts are very well made.

UNERTL $1\frac{1}{4}$ -INCH TARGET SCOPE.—About 10 power. Weight, 26 ounces with Unertl shock absorber and Lyman mounts. Overall, $24\frac{1}{2}$ inches. Mount leeway, $6\frac{1}{4}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, 1.275 inches (32.5-mm.). Exit pupil, 3.5-mm. Eye relief, $2\frac{1}{2}$ inches. Cross-hairs, $\frac{1}{4}$ minute. Parallax, none. Field, 8 feet. Definition, good. Resolution, $\frac{1}{16}$ minute. Remark: This is a popular target scope; one which we have used for several years, on rifles of light to medium recoil.

UNERTL 1-INCH VERMIN SCOPE.—About 6 power. Weight, 21 ounces with Lyman mounts (mounts about $5\frac{1}{2}$ ounces). Overall, $21\frac{1}{2}$ inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, 1.05 inches (27-mm.). Exit pupil, 4-mm. Eye relief, $3\frac{3}{4}$ inches. Cross-hairs, $\frac{5}{16}$ minute. Parallax, none. Field, $13\frac{1}{2}$ feet. Definition, very good. Resolution, $\frac{1}{8}$ minute. Remarks: We use this small Unertl on our varmint rifles for pest-shooting.

LYMAN JR. TARGETSPOT.—About 8 power. Weight, 22 ounces with Lyman target mounts. Overall, $20\frac{3}{4}$ inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, .782-inch (20-mm.). Exit pupil, 3.5 mm. Eye relief, $2\frac{1}{4}$ inches. Cross-hairs, $\frac{1}{4}$ minute. Parallax, none. Field, $15\frac{1}{2}$ feet. Definition, good. Resolution, $\frac{1}{8}$ minute. Remarks: This little target scope is a fine one for heavy rifles and for field shooting. We use it on all our high-power rifles for testing. The objective sleeve is used for focusing as in larger Targetspots.

LYMAN SUPER-TARGETSPOT.—About 15 power. Weight, 26 ounces with Lyman mounts. Overall, $24\frac{1}{2}$ inches. Mount leeway, 6-inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, 1.375 inches (35-mm.). Exit pupil, 2-mm. Eye relief, 2 inches. Cross-hairs, $\frac{1}{4}$ minute. Parallax, none. Field, 8 feet. Definition, very good. Resolution, $\frac{1}{16}$ minute throughout field, better than $\frac{1}{16}$ minute in center. Remarks: Except for its length and size this is our best target scope. We use it for testing small-bore match rifles and for range shooting.

FECKER $1\frac{1}{8}$ -INCH TARGET SCOPE.—About 8 power. Weight, 18 ounces with Fecker mounts. Overall, 22 inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, $1\frac{1}{8}$ inches (28.5-mm.). Exit pupil, 3-mm. Eye relief, $2\frac{3}{8}$ inches. Cross-hairs, $\frac{1}{8}$

minute. Parallax, none. Field, $8\frac{1}{2}$ feet. Definition, good. Resolution, $\frac{1}{16}$ minute. Remarks: This is our old standby. A war horse which has given satisfaction for years in testing our high-power rifles, and for varmint shooting. A sleeve in the middle of the tube is used for range focus and automatic removal of parallax. The eye-end is threaded for vision focus.

LITSCHERT-LYMAN CONVERSION.—About 10 power. Weight, 20 ounces with Lyman mounts. Overall, 24 inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, $1\frac{1}{2}$ inches (37-mm.). Exit pupil, 2-mm. Eye relief, $2\frac{1}{8}$ inches. Cross-hairs, $\frac{1}{4}$ minute. Parallax, none. Field, 9 feet. Definition, good. Resolution, $\frac{3}{32}$ minute (better than $\frac{1}{8}$ minute). Remarks: Litschert converts any small scope of low cost by increasing the magnification and fitting a large objective lens. He has been particularly successful in this on low-cost Lyman models among others. His objectives have sleeve focus-control like the big targetsopes, and he obtains very good optical characteristics, suitable for target work or varmint shooting. We are adding the relative dope on the low-price 4X Lyman scope for comparison with this Litschert conversion of same.

LYMAN 438 FIELDSCOPE.—About 4 power. Weight, 13 ounces with Lyman mounts. Overall, 17 inches. Mount leeway, $\frac{5}{8}$ -inch rib. Tube, $\frac{3}{4}$ -inch (19-mm.). Objective, .66-inch (16-mm.). Exit pupil, 2-mm. Eye relief, $2\frac{1}{4}$ inches. Cross-hairs, $\frac{3}{4}$ minute. Parallax, none. Field, 24 feet. Definition, fair (a mite clouded). Resolution, $\frac{1}{4}$ minute. Remarks: This is the well-known first moderate-cost Lyman scope, which was very satisfactory for short-range field shooting when equipped with Lyman target mounts. The 438 mounts were not very durable.

NO. 1 MALCOLM.—About 6 power. Weight about 18 ounces with Malcolm mounts. Overall, $19\frac{1}{8}$ inches. Mount leeway, 6 inches. Tube, $1\frac{1}{16}$ -inch (18-mm.). Objective, $\frac{9}{16}$ -inch (15-mm.). Eye relief, $1\frac{1}{4}$ inches. Exit pupil, 2.5-mm. Cross-hairs, $\frac{1}{6}$ minute. Parallax, none. Field, $11\frac{1}{2}$ feet. Definition, good. Resolution, $\frac{3}{32}$ minute (not quite $\frac{1}{16}$ minute). Remarks: Malcolm scopes are among the oldest American scopes, and are probably the oldest which are still being made. Our sample has been used for years under rugged conditions in the field on varmint rifles and in testing for accuracy. Its performance has always been satisfactory. The Malcolm rear mounts have parallel yokes which insure straight-line adjustments, with the lateral movement confined to the front mount, and elevation to the rear mount.

Malcolm scopes have straight tubes without enlarged ends. Focus adjustment, in front, and reticule adjustment, near the eye-end, are accomplished by sliding external covers, which are then locked by coin-slotted screws. The Malcolm C-type top mounts have shallow feet which are screwed directly to the barrel, and therefore they bring the scope lower than conventional target mounts by nearly as much as the height of the standard dovetail block, on straight barrels. Malcolm mounts hold the scope rigidly in square collars. These scopes can also be used with Lyman mounts. Their poorest feature then is dependence upon a shallow groove in the tube and a pointed plunger (with spring) for prevention of rotation and play. A rib and a square notch would be far more reliable, especially after considerable use. For a permanent installation on any straight barrel the complete Malcolm sight, screwed directly to the barrel, makes one of the neatest, smoothest, and more dependable outfits it is possible to buy for an accurate varmint rifle; and they are moderate in cost.

PISTOL MACHINE REST

HOME-MADE

By WILLIAM H. LUX

NOTE: *The author of this article is Chief Range Officer and Firearms Instructor of the Indian Hill Rangers, a well-known police organization near Cincinnati, Ohio. In 1937, and again in 1938, Mr. Lux won the Cincinnati Regional Pistol Championship, and held the City Indoor Championship during the same two years. He finished among the first ten in the Second All-American Pistol Championships in 1938, and is well known among handgun experts in the Middle West and South.—Editor.*

MY DESIRE FOR A MACHINE REST for pistols and revolvers dates back about four years, when I first began shooting, with the idea that I might become a fair pistol shot. Every good score I chalked up made me feel very proud (it still does), but when shooting slow fire, and sixes and even fives popped up often in front of my horrified eyes, the very human doubt was raised in my mind as to whether the gun and ammunition I was using were as accurate as those that the experts used. And thus was born a curiosity as to just how accurate the guns and ammunition we use in every-day shooting really are.

Then I began reloading for myself, as well as for the Indian Hill Rangers. Many times since then when one of our men has finished shooting a poor score, I have heard something like this: "How in the h— can I shoot a good score with reloads? I'll bet this d— stuff wouldn't score a ninety at fifty yards if shot from a machine rest!" All of which made me very unhappy—even if I had just made a good score myself with the same ammunition.

I had never used—or seen—a machine rest, but ideas for making one kept coming to me, and finally I started, knowing that I did not have money enough to buy one. I had some odd lengths of rough pine 2 x 4 and 2 x 6 inches, and some inch lumber of various widths, lying around my basement workshop, and it cost less than four dollars for the seventy-five bolts that were used, together with one sack of cement for the concrete base to mount the machine rest on.

The first swinging arm used gave good groups, and taught me many things about gun accuracy and ammunition reloading. However, the first one was not entirely satisfactory, as in testing a revolver it was necessary to load the cylinder, clamp the gun in place, fire, and then unclamp again to reload for the next group. The point of impact never remained exactly the same, because it was impossible to achieve exactly the same degree of tightness in clamping the gun each time. Too much time was lost, and also I wanted to be able to shoot groups of ten shots, or even fifty shots if I desired, without any change in the center of impact. I felt sure that soft lumber was not the best material for the swinging arm, but I was also sure that the design was practical; and in September, 1938 I made another swinging arm, again using old lumber, but this time well-seasoned clear oak.

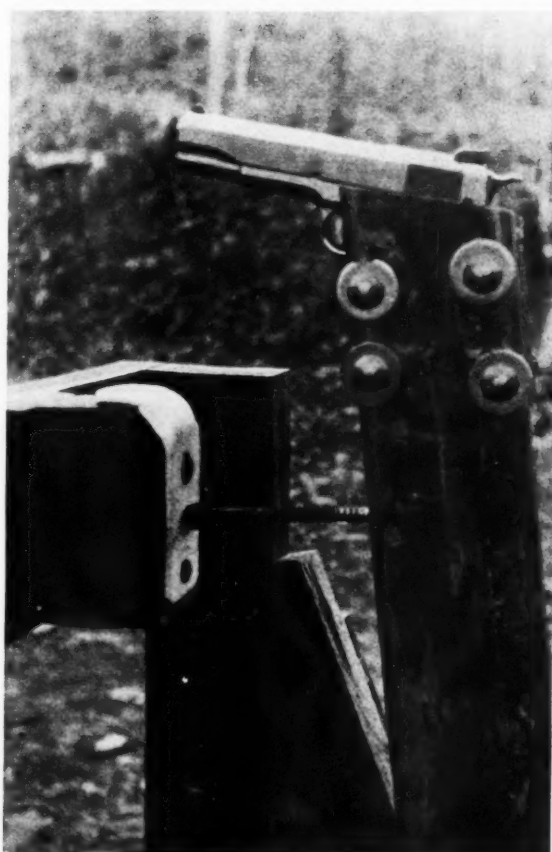
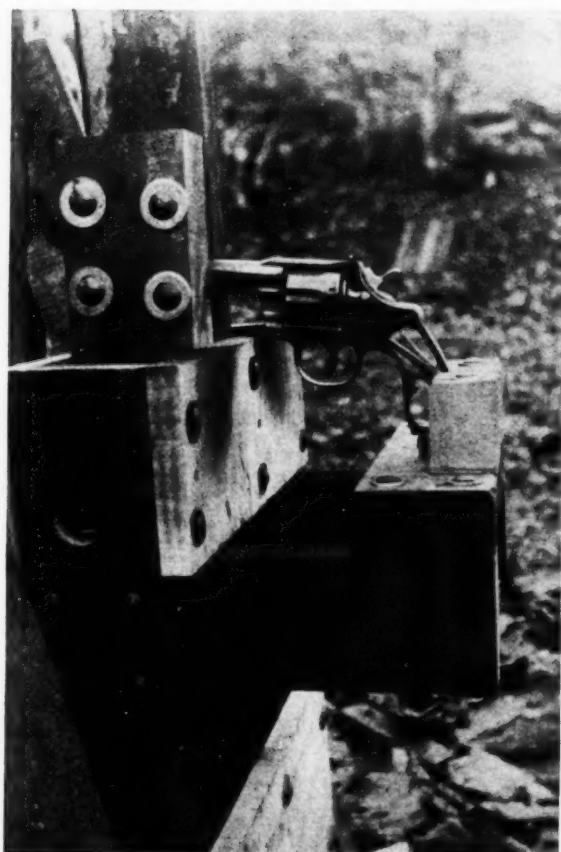
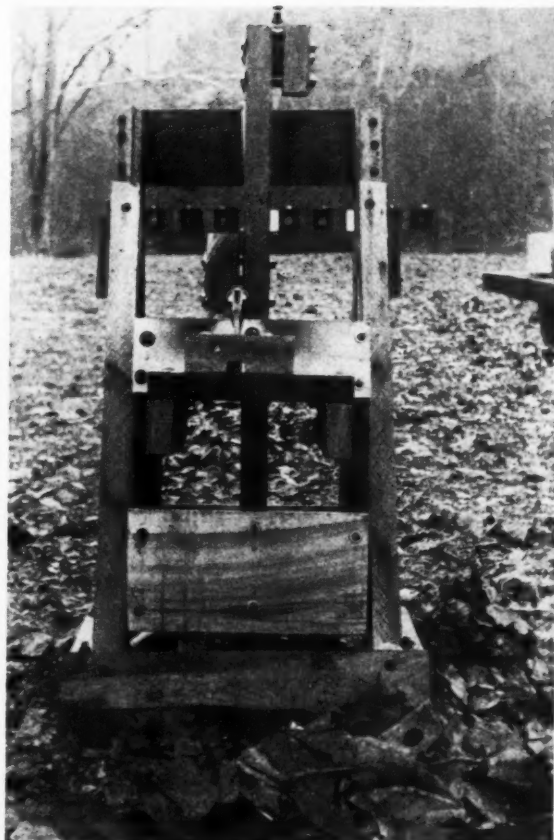
Because I wanted to be able to test the .45 automatic pistol (the old clamp would not hold it), I determined to make an arm with two clamps: one for the .45 automatic, and one that would take nearly all other types of guns. This .45-automatic clamp has been only recently completed, and I have had too little time in which to test it to report on it here. I will say that in the only test I have made, up to this writing, a hundred rounds of reloads were fired consisting of a 230-grain lead bullet and 5.5 grains of duPont No. 5 pistol powder. The ten-shot groups

obtained were poor, due I believe to gun or ammunition, or both, as the gun did not loosen or shift in the clamp the slightest bit, and the center of impact remained constant even if the groups were large. I am sure that this .45-automatic clamp will give good results with an accurate combination of gun and ammunition.

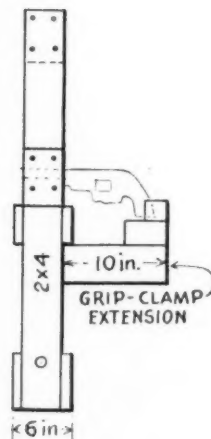
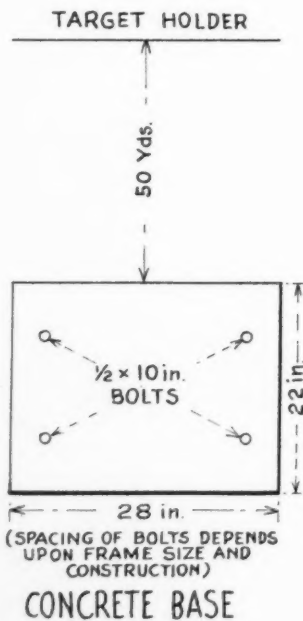
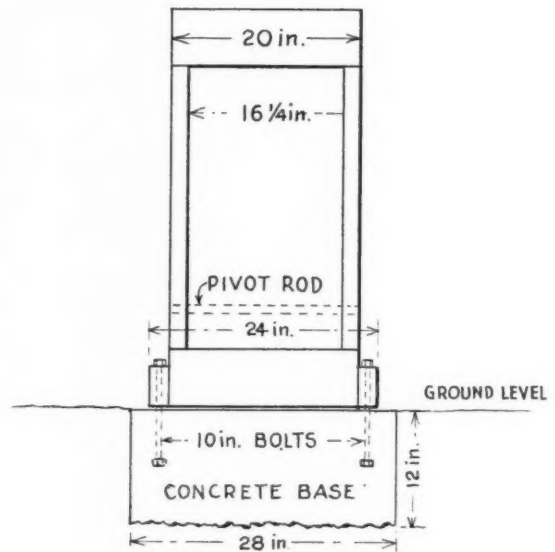
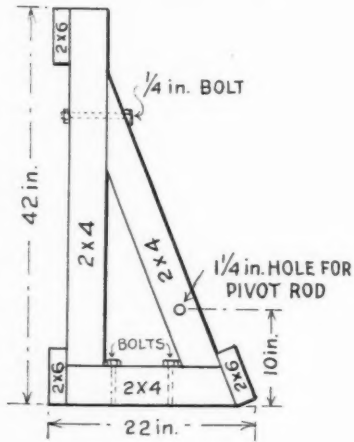
As for other calibers, I have shot so many ten-shot groups of around one inch at fifty yards (many of them even less than one inch) that I am sure the accuracy of this clamp is good enough to please almost anyone. I never expected, nor do I claim now, to get the finest known accuracy from this home-made and crudely-built affair, nor do I expect to run extensive comparison tests of various guns and ammunitions, but rather I want to know with certainty how many guns, and those of my friends, perform with the diet of fodder we give them.

Guns that have been used a lot will wear some, and that wear may or may not show up in the size groups the gun will shoot. Ammunition that shoots less than two-inch groups in one gun may make six-inch groups in the twin sister to it (unless I am mistaken and my notes tell lies). Ammunition, whether made by factory, gun-crank, or amateur, may shoot nothing but tens all day long from one gun, and spread them all over the black with another. I have in mind a test I made some time ago, using eight .38-caliber Officers' Model guns ranging in age from new to three years old with many thousands of rounds of firing. Six loads were tested in each gun, and not less than two or more than ten six-shot groups were fired with each load from each gun. One was a factory load, and the other five were pet reloads. Only one load (one of my own reloads) gave consistent accuracy from all eight guns, the six-shot groups from this load running from less than one inch to around three inches. One gun gave a bigger group with nearly all loads than did the others, the largest six-shot groups being around six inches. The largest group of all was over six inches, and came from a popular brand of factory ammunition loaded with a 158-grain conical bullet. This particular lot of factory stuff was purchased in July, 1938 from a local dealer who has been in business only since June, 1937, so I presume it was not old stock. At least it had not lain on his shelves, or ours, for very long.

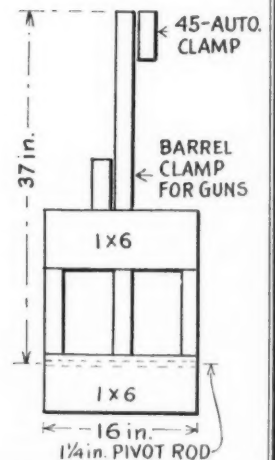
Since my tests of different reloads have shown me ways and means of making ammunition that shoots more accurately—at least from machine rest, I wonder how many persons are loading their own ammunition without any knowledge of the practical accuracy of the finished product, and then going out and shooting it, and wondering if they will ever be able to shoot championship scores at fifty yards. Some of these must be shooting ammunition that wouldn't score ninety at fifty yards if shot from a machine rest! All the components and workmanship may be excellent, but if the load is not well balanced it may



MAIN FRAME



SWINGING ARM
(SIDE VIEW)



SWINGING ARM
(REAR VIEW)

not be capable of better than six-inch groups at fifty yards; perhaps not even that.

I am not advising every shooter to build himself a machine rest, because most guns when shot with factory ammunition show very good accuracy, especially with the target loads brought out recently by the ammunition companies. Any man who can afford to shoot these loads will probably get better results than he will ever get from loads of his own making, unless he is willing to do much experimenting, or is fortunate enough to have some old-timer with a wealth of knowledge teach him some of the tricks of the game. Some of us, however, for reasons of economy or from a genuine love of the art, will always roll our own, and shoot them with confidence and pride.

I believe that clubs or groups of shooters whose members do a lot of reloading should have a machine rest so as to be able to know definitely whether Bill's or Joe's inability to shoot a good score (especially at fifty yards) is his fault or the fault of gun or ammunition—or both. I know that I am making a reload for the .38 Special that I can depend upon to make a two-inch ten-shot group at fifty yards, with the chances that it will do even better. Of course I mean when shot from my gun. What it would do in your gun is another matter.

To anyone who wants to build a machine rest similar to mine, I can only say that I have no patents on it, and I would estimate that if you have to buy all the material new the cost could still be kept under ten dollars. Few and simple were the tools with which I built mine, these consisting mainly of saw, hammer, brace with four sizes of wood bits, a carpenter's square, and a small wood chisel. Of course the labor took a heavy toll of my spare hours for several days. As I am not a draftsman, and blueprints made by me would only confuse us all, I am going to depend upon photographs, and a few simple drawings, to show the most important details of construction. The general dimensions are as follows:

Frame—Made from 2 x 4 material, with the cross-braces in front made from 2 x 6 fastened together with quarter-inch carriage bolts throughout. (Don't be stingy with bolts, or any bracing ideas of your own that will make the rest more rigid.) Height from concrete base to top is 42 inches. Width inside where swinging arm works is 16 1/4 inches, as the swinging arm is 16 inches wide at this point. Outside frame size will vary with the thickness of material used and the amount of bracing put on. Mine is 24 inches wide and 22 inches long.

Swinging Arm—Made of oak throughout, the main arm and the two side arms being 2 x 4 material, the bracing being 1-inch stuff. The main arm is 42 inches long, top to bottom, and 37 inches long from pivot rod to top. The two short arms on either side are 21 inches long, the three arms being bolted together to form one strong and rigid arm that is 16 inches wide where the pivot rod goes through. This long bearing length takes all the side movement out of the arm, and makes it very rigid. The pivot rod is simply a piece of 1 1/4-inch pipe, the holes in both frame and arm being carefully bored with an extension bit to just the right size to give a snug fit on the pipe.

Concrete Base—This is 28 inches wide, 22 inches long, and about 12 inches deep. This base was not poured until after the frame was made, and by careful measuring I was able to set the four 1/2 x 10-inch holding-down bolts when the concrete was poured, allowing five inches of each bolt to protrude above the surface of the concrete to fasten the rest to.

The only change made in this machine rest since the pictures were taken is in the elevation adjustment, which is

now by a more positive method than the lag screw shown in one or two of the pictures.

A gun may be fastened in either clamp, and left there; for it can be fired and reloaded without disturbing the clamp. If a revolver is being tested, it goes in the lower clamp (see picture). Half of this clamp is formed by the main arm and the other half by a separate block of wood. The general contour of revolver barrels is cut into each half of the clamp (mine was fitted with Prussian Blue to the barrel of an Officers' Model), but the grooves are cut to such depth as to grip the gun barrel at the sides only, the clamp not closing by about 1/2-inch. Four 3/8 x 5-inch bolts draw the two halves of the clamp together. In actual shooting I find that if the clamp is drawn up too tight, the groups seem to be larger. I tighten mine up snug, and then back off the nuts just a little. The brace fitted around the backstrap of the handle will keep the gun from working loose and sliding to the rear, while the gun butt can be supported from below by a wooden wedge, pushed in finger-tight only. The .22-caliber semi-automatic pistols and single-shot guns are also tested in this clamp, gripping them by the barrel only. As regards these guns, I have never tested one that was not sufficiently accurate to enable the best pistol shot to do good work with it, when used with .22 long rifle cartridges of any standard make. Using the .22 long or .22 short cartridges, even when the gun is chambered for them, is quite a different matter, when testing at fifty yards.

I find that in using this machine rest it is very important to do everything as gently as possible, and the highest degree of uniformity in trigger squeeze, return of swinging arm to firing position, etc., is necessary for best results. For example, in squeezing the trigger of a revolver clamped in the rest, I place my trigger finger on the trigger, and my thumb on the back of the trigger guard, and gently squeeze the trigger straight back until it releases. Whatever procedure is followed with guns of various types, I strive to squeeze the trigger exactly the same each time, and without any side pressure. Whether this rest is more—or less—sensitive than others, I do not know. I do know that the more carefully and uniformly I operate it, the smaller are the groups obtained.

I find that it is not necessary to control recoil in this rest, except with a very heavy load that might move the swinging arm backwards beyond the vertical position. Then all that is necessary is to hold the free hand about six inches behind the swinging arm, and catch it as it comes back. The amount of movement of the arm will, of course, vary with the caliber of gun. A .22-caliber will not move the arm more than an inch or two, while a heavy .38 load will move it several inches. A very important point is to return the arm to the forward position very gently, and to make sure that it is all the way forward, against the adjustment stop, before firing the next shot. With a little practice anyone should get very good results with this rest.

I have observed that the first group fired from a gun may not be quite as good as succeeding groups. I believe that this is because the gun settles itself in the clamps during the first few shots, and finds a natural bearing.

The .45-automatic clamp presented a problem that was difficult to solve. The only part I could figure to clamp the gun by was the grip, with the stocks off. The two projections on each side of this gun, that the regular stocks fit over, are very strong, so I bored holes in each half of the clamp to receive these projections. The holes are of such size, and so carefully spaced as to distance, that when the gun is shoved into the clamp blocks the whole assembly

(Continued on page 35)

Classification to Feature 1939 Tournaments

A FAR-REACHING change in the nation-wide competitions program of the National Rifle Association is now undergoing final study by the Special Competitions Committee appointed by the Executive Committee at its February Meeting. Subject to changes which may still be made by the Competitions Committee, the program will be substantially as outlined in this article. The general principles will apply equally to the small bore rifle and to pistol and revolver shooting. No effort will be made to incorporate .30 caliber rifle shooting in the program at this time because of the fact that the selection of National Match Rifle Teams in state competitions and the payment of the expenses of such teams to the National Matches out of War Department funds has already solved many of the problems which the new program attempts to solve in the case of small bore rifle and pistol shooters.

The new program is much broader than anything heretofore attempted by the National Association. It represents another step along the road which has seen small bore rifle and pistol shooting develop in a few short years from a state of highly localized competition with a diversity of regulations, targets and programs, into reasonably well standardized sports more and more accepted by the public as important activities in the national sports picture. The very fact that rifle and pistol shooting have developed so rapidly has resulted in growing pains of one kind or another.

The 1939 program is aimed at the correction of weaknesses or the improvement of the existing situation in four important directions:

First, the object is to encourage newcomers and shooters of only average ability by providing a nationally recognized classification system, by requiring the more important tournaments to adopt this classification system and to award class prizes, and by encouraging the sponsors of all tournaments, regardless of their size, to similarly adopt a classification system based on nationally recognized averages.

Second, it is the hope that the new program will protect the interests of the more expert shots by providing ample incentive in the way of adequate awards and also by providing for the determination of the important national championships entirely on a shoulder-to-shoulder basis so as to eliminate any question of the relative ability of the men who are publicized as the outstanding national ranking shooters.

Third, the program endeavors to lift the quality of range management, range construction and programs conducted by local clubs and to avoid local dissension caused by varied interpretation of rules, by giving all local clubs an opportunity to bring their Shoots under the general supervision of the N. R. A., which will then assume the responsibility of final decision of protests and interpretation of rules.

Fourth, and one of the most important features, is the improved publicity which will result from the operation of the entire plan. There have been two major factors hindering wider publicity for rifle and pistol matches. One has been the multitude of matches and "championships" which have confused sports writers and have led to the belief that the sport was not organized on a truly national basis. The second factor interfering with better newspaper publicity has been that local club shoots were purely local affairs and were not in any way tied in with either the

Registered Shoots in the same area or with the National Championships at Camp Perry. It is believed that the program now under consideration will to a great extent remedy both of these difficulties. It will provide for officially recognized tournaments of various grades, in much the same way that baseball provides for leagues of various degrees of importance, so that sports writers will find it easier to understand what they are writing about and consequently will be more inclined to cooperate and give space to shooting activities. Furthermore, inasmuch as the scores made even in local tournaments will be official scores registered by the National Rifle Association and included in the computation of shooting averages which will fix a man's national classification for competitive purposes, it is believed that sports writers will come to understand that their local clubs are actually a definite part of the national shooting program rather than being merely a small group of local sportsmen shooting at targets for the fun of it.

While it is obviously not feasible in this first year of the plan's operation, it is nevertheless hoped that eventually the program can be so integrated that each local club will select its outstanding marksmen in each of three classes, sending them to the State Championship Tournament. The State Tournament will in turn determine the leading marksmen in the state in each of three classes and they will be sent to the Regional Championships. The Regional Tournaments will determine the Regional Champions in each class and they will be sent to the National Matches where the National Champion will be determined shoulder-to-shoulder on a common firing line under identical shooting conditions. The number of Regional Tournaments to be eventually established will of course depend on the growth of the game, on the density of shooting population in various areas, and on the availability of adequate range facilities and properly trained range and statistical personnel.

The length of time required to work out the plan to its ultimate phases under which National Champions will be selected by a series of eliminations beginning with the local club range will depend on how much active interest and support is afforded the program by clubs throughout the country. For this year only a small start can be made. The grading of Registered Tournaments will be undertaken and a few Regional Matches established. The railroad fare of at least the Expert Class and Sharpshooter Class Regional Champions will be paid to Camp Perry. The Marksman Class winners will also be sent to Perry if they turn out in sufficient numbers at their Regional Tournaments.

Details as to the location of this year's Regional Tournaments will be furnished all club and state association officials by bulletin as rapidly as the plans can be worked out. Meanwhile, the following general regulations are those which will be used as a guide in the development of the general program.

The following tentative regulations are written so as to cover the small bore outdoor matches. The pistol and revolver program will be identical in principle. Pistol averages will be computed on the basis of the National Match Course or its equivalent. When a Registered Tournament program provides a slow fire match of 20 shots at 50 yards, a timed fire match of 20 shots at 25 yards and a rapid fire match of 20 shots at 25 yards the three events will be considered as the equivalent of twice over the National Match

Course and the scores will be so recorded and computed in the Registered Average.

Scores fired with the .45 Automatic will not be included in the Registered Averages for classification purposes.

Tentative classification scores for the pistol and revolver (excluding the .45) are—

| | |
|--------------------------|-----------|
| Expert Class | 275 |
| Sharpshooter Class | 265 |
| Marksman Class | 250 |
| Unclassified | Below 250 |

The 1939 Registered Tournament Plan

1. Classes of Registered Tournaments

Registered Tournaments will be designated as

Class AA—The National Small Bore Championship Tournament (Camp Perry).

Class A —Regional Championship Tournaments and the National Midwinter Tournament.

Class B —State Rifle Association Annual State Championships and established Annual Tournaments not designated as Regional Championships.

Class C —Tournaments conducted by local clubs or leagues.

All Registered Tournaments except Class "C" events will be annual events. Any number of Class "C" Registered Tournaments may be held during the year by any club, league or other group.

The term "Registered event" as used in these regulations means any *match* which is programmed as a *part* of a Registered Tournament and which is fired over the Dewar Course or its equivalent. A 50-yard 20-shot match plus a 100-yard 20-shot match fired at the same Tournament will be considered the equivalent of one Dewar Course event. A similar pair of 40-shot matches at 50 and 100 yards will be considered the equivalent of two Dewar Course events, etc.

2. Classification

(a) Competitors must have fired the Dewar Course (or its equivalent) five *times* in Registered Tournaments to establish a "Registered Average." This is not to be interpreted as meaning that a competitor must have fired in five Registered Tournaments. He will probably fire the Dewar Course or its equivalent several times in each Registered Tournament. All small bore shooters at the National and Regional Tournaments will be classified on the basis of their Registered Average for the preceding year with the exceptions below mentioned.

(b) Shooters who have not established a Registered Average may submit to the Statistical Officer a statement substantiated by any officer of his club or other responsible person indicating his fair average scores in local competition over the Dewar Course. The competitor will then be placed in his proper class or in any higher class if he so requests. He will remain in that class throughout his first Registered Tournament except as provided in Paragraph (c) of this section. In succeeding Tournaments he will be classified according to his Registered Average.

(c) Shooters whose scores in registered competition exceed the top limit score of their class in three successive Registered events at any Registered Tournament will be reclassified and placed in the next higher class. Such reclassification will be effective immediately and will not be delayed until the conclusion of the Tournament in which the competitor is then engaged.

(d) Shooters whose scores over the Dewar Course (or its equivalent) in Registered Tournaments exceed the top score for their class five times during the current season will be reclassified and placed in the next higher class. Such reclassification will however not be effective until the shooter has been notified in writing by the Competitions Division of the N. R. A.

(e) Any score of less than 395 in a Registered event made by a competitor in the Expert Class will be disregarded in computing the competitor's season average unless such lower score shall have been shot in ten Registered events during the current year.

Any score of less than 388 made by a competitor in the Sharpshooter Class will be treated as above indicated in the case of Experts.

Any score of less than 378 made by a competitor in the Marksman Class will be treated as above indicated in the case of Experts.

(f) Registered Averages will be computed from scores made over the Dewar Course (20 shots at 50 yards and 20 shots at 100 yards) and from the combination of single stage 50-yard and 100-yard events (one 20-shot 50-yard match and one 20-shot 100-yard match being the equivalent of one Dewar Course event. One 40-shot 50-yard event and one 40-shot 100-yard event being the equivalent of two Dewar Course events). Metallic sight and scope sight events will be given equal weight in computing averages.

3. Classification of Competitors at Registered Tournaments

(a) Four national classes of competitors are established for the purpose of making certain prize awards at Class "AA" and Class "A" Registered Tournaments. Classes will be based on Registered Averages as follows:

| | |
|--------------------------|-----------|
| Expert Class | 395-400 |
| Sharpshooter Class | 388-394 |
| Marksman Class | 378-387 |
| Unclassified | Below 378 |

(b) The Registered Average scores indicated above as a basis for classification at Class "AA" and Class "A" Tournaments may be modified by the local sponsors in Class "B" and "C" Registered Tournaments to whatever extent seems advisable in order to best promote the sport in the area served by that Tournament. The upper or lower limits for the various classes may be raised or lowered, the number of classes may be increased or decreased or the Tournament may be conducted without classes. Programs for all Registered Tournaments must indicate clearly what classification is to be used.

4. Supervision and Regulation

(a) Registered Tournaments of all classes will be conducted strictly in accordance with current

N. R. A. Shooting Rules and the Special Registered Tournament Regulations issued for each class of Tournament.

- (b) Final decision of protests and questions of disqualification or expulsion will rest in the N. R. A.
- (c) Competitors suspended or expelled by the N. R. A. for unsportsmanlike conduct at any Tournament will be barred from all Tournaments.
- (d) All scores over the Dewar Course (or equivalent) will be reported to the N. R. A. immediately in order that the Registered Averages may be constantly maintained and changes in competitors' classification published.
- (e) An Official Referee from N. R. A. Headquarters Staff or from among the National Officers of the Association will supervise each Class "AA" and Class "A" Registered Tournament. An Official Referee appointed by the Association from among the officials of the State or National Associations or one otherwise qualified will supervise each Class "B" Registered Tournament. An Official Referee appointed by the Association from among the officials of the local club or one otherwise qualified will supervise each Class "C" Registered Tournament.

5. Programs

- (a) The program for the National Small Bore Championships (Class "AA") will be arranged by the N. R. A.
- (b) The programs for Class "A" Registered Tournaments must include firing on two succeeding days. They will include two each of the following individual events—(1) the Dewar Course, (2) 40 shots at 50 yards, (3) 40 shots at 100 yards, (4) 40 shots at 50 meters—each course being fired once with metallic sights and once with any sights. The program will also provide an Aggregate of the eight events which Aggregate will constitute the Regional Championship (or National Midwinter Championship). Additional matches and additional days of firing may be provided at the discretion of the Tournament sponsors. The Aggregate will provide suitable awards in each of the three classes—Expert, Sharpshooter and Marksman indicated in Paragraph 3. Similar Class Awards will be provided in as many as possible of the events constituting the Aggregate. The entire program will be approved by the N. R. A. prior to publication.
- (c) The programs for Class "B" Registered Tournaments must include two Dewar Course individual events, one to be fired with metallic sights and one with any sights. Additional matches may be added at the discretion of the Tournament sponsors. Classification based on the national and regional grades is recommended but not required. The program must indicate whether or not a classification system is to be followed in the distribution of prizes and must specifically indicate the upper and lower limits of the Registered Average scores constituting each Class. The program must be approved by the N. R. A. prior to publication.
- (d) The programs for Class "C" Registered Tournaments must include one Dewar Course individual event, either metallic sight or any sight. Additional events may be added at the discretion of

the Tournament sponsors. Classification based on the relative ability of shooters in the locality is recommended but not required. The program must indicate whether or not a classification system is to be followed in the distribution of prizes and must specifically indicate the upper and lower limits of the Registered Average scores constituting each Class.

The program must be approved by the N. R. A. before publication.

- (e) All Registered events must be squadded and entries will not be accepted in any such match after the first relay has taken its place on the firing line.

6. Number of Competitors

- (a) To be considered a Registered event a minimum of 15 competitors must have actually fired the event. In any case where the required minimum of competitors fails to fire in at least one event on the program the Registration Fee will be returned to the competitors by the Statistical Officer.
- (b) To retain its status as a Class "B" Tournament a State shoot must attract sufficient competitors to be truly representative of the various small bore shooting organizations of the State.
- (c) To attain or retain a Class "B" rating an established annual Tournament other than the State Association Championships must attract approximately 100 registered competitors.

7. Fees

The Registration Fee herein referred to is to partially cover the additional costs to both the N. R. A. and the local sponsors involved in the conduct of the Registered Tournament Program—the correct reporting of scores, maintenance of the season's records of every competitor, and the computation and publication of averages. This fee must not be confused with the charge made at some Tournaments to cover the cost of a brassard or membership in the State Association or local organization, or to otherwise assist in defraying the general costs of running the Tournament.

- (a) Whenever the "Registration Fee" charged at a Registered Tournament exceeds the amount specified in these Regulations, the Tournament Program must clearly indicate the amount of the Official Registration Fee and the amount which is being charged in addition for other purposes.
- (b) The Registration Fee will be paid by each competitor prior to making his initial entry at each Tournament. The amount of the Registration Fee will be graduated as follows because of the variation in volume of statistical work:

| | |
|----------------------|--------|
| Class AA Tournament— | \$1.00 |
| Class A Tournament— | 1.00 |
| Class B Tournament— | .50 |
| Class C Tournament— | .25 |

As soon as the required reports accompanied by the necessary remittances are received by the National Rifle Association from the Registered Tournament's Statistical Officer a refund of 50% of the Registration Fees will be made by the Association to the Tournament sponsors. This amount is intended to reimburse the Statistical Officer for the labor involved in connection with the Registered Score records.

The Old Coach's Corner

I HAVE BEEN asked to write this month on barrel vibrations. This is hardly a subject for the beginner, but nevertheless I hope it will prove interesting to all such, and also to some of the older shooters, giving a little better understanding of the rifle and its shooting.

I will have to begin by stating that "vibration" is not really the correct term for the movements that a rifle goes through after the trigger has been pulled, and before the bullet emerges from the muzzle. After the bullet leaves the barrel the only things that happen are recoil, report, and perhaps after-vibrations, and we are not really interested in any of these here because they do not affect the flight of the bullet. But just before the bullet leaves there is a decided movement to the barrel, and in fact to the whole rifle, and this does influence the flight of the bullet, and thus we riflemen have to give attention to it.

By "vibration" we visualize a movement like that of a tuning fork. Pull the end of a tuning fork over hard to one side, and it does not vibrate because it is under strain. But then release it and at once it begins to vibrate. So too, while the bullet is passing up the bore the barrel is under severe strain, and while it does move, bend, buckle, or jump from this strain, it does not vibrate in the true sense of the term.

If we take a Mann barrel with concentric rings and a concentric action, and fire it from a Mann "V" rest, all this barrel does is to slide straight back through the "V" for perhaps $1/16$ or $1/8$ inch. All strain is in line with the axis of the bore. The bullet will strike the target just that amount under the prolongation of the axis of the bore onto the target that it drops from gravity during its flight.

But if we shoot an ordinary rifle in its conventional stock at a target, holding it in the ordinary manner, butt to the shoulder, we find that the bullet strikes the target very much lower than we would expect from the force of gravity alone. That is, if we shoot a cartridge the bullet of which drops $2\frac{1}{2}$ inches in 100 yards, then that bullet will strike very much lower than a point $2\frac{1}{2}$ inches below where the projected axis of the bore on the target comes. Why?

When the conventional rifle, fired from the shoulder, starts to recoil, the resistance to the recoil is not in line with the axis of the bore, but is at the buttplate, four or five inches below. Thus the rifle recoils around this center of resistance, the breech of the barrel jumping both up and back. If we take a thin bar of iron, support it by a wire at its center or balance so it is suspended horizontally, and then strike one end of it upward with a hammer, the opposite (muzzle) end first of all flips or bends downward. We can see this by attaching an inked swab to the muzzle of the bar, with a piece of paper almost touching the swab under the muzzle. When the breech is struck upward the swab will first go down and mark the paper. A rifle barrel does exactly the same thing. As the breech jumps up and back the barrel buckles and bends, and the muzzle flips down. The bullet departs from the muzzle at about this instant, and the barrel being bent or inclined downward, the bullet strikes lower on the target than it would from the gravity drop alone. How far it strikes below depends upon many things—how much the barrel has dipped down, or if it has dipped completely down and is somewhere on the up-jump when the bullet leaves. A long, thin barrel will dip more than a short, heavy one.

There may also be other movements which will complicate this down jump at the muzzle. Particularly if the barrel be not tightly screwed in its receiver (takedown) or the

barrel and receiver tightly screwed and bedded in the stock, all sorts of unaccountable jumps and movements may take place, to the great detriment of accuracy. But a first-class, well-made rifle clearly dips down at the muzzle when fired, and this dip is quite uniform. In actual practice we correct for this dip when we sight our rifle, and we are not cognizant of it until we do something to disturb it.

One of the things we can do to disturb it, and thus make it clearly evident, is to rest the muzzle of the rifle on some hard substance when we fire. This will of course restrict the down flip, and the bullet will strike higher on the target. We have all of us noticed this. Also, those of us who have shot different loads in the same rifle have noticed that the bullets may strike at very different points on the target. For example, in the .30 caliber a 150-grain bullet may strike at a certain point at 100 yards, and a 180-grain bullet fired at the same velocity may strike at a point 5 or 6 inches from the 150-grain bullet. This is not due to trajectory, because there is not more than a half-inch or so of difference in trajectory and the drop of the two bullets over 100 yards. It is due to what particular point in its jump the barrel was at when the bullet left it. The barrel may have dipped down only half way when one bullet left, and be at its full dip when the second bullet left; or the barrel may have completed its maximum dip and be on the rebound when one of the bullets departed, and that bullet will strike the target low or high in consequence.

Every individual rifle, even those as alike in model and caliber as two peas, will jump slightly differently, and thus we cannot predict where any particular cartridge will cause its bullet to strike. For example, having sighted a rifle in exactly for a certain load, we cannot predict where another load will strike. It may strike high or low, or it may strike slightly right or left if the whole rifle is not very stiff and has buckles or flips other than straight up and down. We must learn the peculiarities of our rifle by actually shooting it with the various loads. Loads varying only slightly may thus give us quite varying centers of impact on the target; although we also find that if our rifle has a heavy barrel, a one-piece stock, and is very tightly screwed and bedded in the stock—is stiff from butt to muzzle, the variations from load to load, and from cartridge to cartridge, are much less than with light-barrelled and loosely-stocked rifles. That is why our target shooters always make the higher scores with heavy-barrelled match rifles which are carefully and tightly bedded in their stocks.

In these days we hear much about "research." Let me recommend research to you. Plainly speaking, it means looking back to see what has been done before. If we look back we will find, first, that the matter is fully explained in a letter written by Mr. W. E. Metford, probably the most eminent small-arms ballistician who ever lived, this letter being published in the book "The Modern Sportsman's Gun and Rifle" now out of print, which was the authoritative work on the subject from 1882 to about 1900. Then, again, let us look back in the columns of this magazine, way back to where it was called "Arms and the Man", and there in the issue of March 8, 1914 we will find the whole matter of barrel buckle and flip (call it vibration if you will) most carefully and painstakingly described by our own Harry Pope. Harry explained it in detail, and in doing so he completely silenced a spirited discussion coupled with conjectures and guesses on the why and wherefore of barrel vibration, that had been going on for six months or more.

THE AMATEUR'S CHANCE

By RAY CARVER

NOTE: This is the first article to be received by us which expresses a viewpoint that has become increasingly evident in our personal contacts with shooters during the past year and a half or two years. The competitive program of the National Rifle Association is being steadily developed in the direction recommended by Mr. Carver. This program seems logically to divide itself into three steps: First, the training period, which includes qualification firing and local competition; second, the intermediate period, which might be designated as "restricted" or Class B competition on a county or state-wide basis; and third, the real championship matches on a regional and national basis, open to all comers.—Editor.

AN ARTICLE APPEARED RECENTLY in one of the leading outdoor magazines regarding the slim chance an "amateur" rifle shot has in competing with "professional" bullseye punchers. The truth of this lament is undeniable: the ordinary rifle shot using ordinary equipment has almost no chance to win in any big match. Nor would our local ball club have a chance with the Chicago Cubs, though the latter made a lame showing against the Yanks.

But there is a brighter side to the picture. The ordinary shot using ordinary equipment can have just as much fun as Bill Woodring. Not, perhaps, by entering a national match with a thirty-five-dollar outfit with the sole object of winning a flock of first-place medals, for though there isn't another line of sport in which it is more easy for the amateur to become a champion, championship in any line requires a lot of hard work and the expenditure of considerable money. But there are other ways. Too many amateurs expect to reach the top too easily. The champion is a champion because of a number of things. For one thing, he has worked to become better than the other fellow; also he may have exceptional natural ability, and be so fixed financially that he can own the best of equipment.

Personally, I don't believe there should be any handicap imposed upon the "professional." When the match is advertised as a free-for-all, let it be just that. What honor would there be in winning a match wherein the better shots were penalized to compensate for the inexperience and inability of the mediocre ones?

We have to crawl before we can walk. If we aren't ready for the national champions, or even state champions, there's no law against working on the hometown boys. Plenty of local tournaments could be arranged with all the conditions of national matches, and the big shots aren't going to come to Hoozierville just to cheat the home boys out of half a dozen medals. Some take the attitude that these pee-wee matches aren't sporting; that every match, to be worthy of the name, should be registered and an open event. But, during the period in which the amateur is winning his spurs, I fail to see the argument against strictly local matches, county shoots, and a league of three or four small clubs, with medals for the winners. I'd sooner win one medal in competition with twenty or thirty ordinary rifle-men, than half a dozen rating medals. And I believe it is better training, for even in the smallest match there is a degree of match competition. Moreover, every one of those pee-wee matches is a stepping stone to stiffer competition.

So much for that phase of the amateur's chance to win at least local fame, and get himself some valuable experience. While he is doing it he is going to have plenty of fun, too, if he enjoys shooting.

Then there is the big moan that a host of amateurs can't afford the sort of equipment it takes to win matches. True enough, but a fellow shouldn't moan too loud until he is sure he is on a par with the best equipment. I could trade rifles with dozens of top-notchers, and they'd still beat the

socks off me. Of course the best equipment will boost scores, that's why the experts put out good money for it. But a lot of people get a kick out of an old Ford while their neighbor owns a Packard. I have a rifle and scope sight which, together, didn't cost thirty-five dollars, and I've shot ten-X possibles with it at a hundred yards. I could spot my shots through the scope, too. I've done a lot of work on the outfit—rebuilt the scope into a fifteen-power, installed new crosshairs, and weighted the rifle stock. It isn't as good as a two-hundred-dollar outfit, but I've had a lot of fun with it, and it's won some medals. Until I can afford a better one, it's the best gun in the world. I know of one cheap single-shot target rifle with a rebuilt scope which cost the owner less than twenty-five dollars, that will shoot consistent possibles on the 50-foot gallery target. Even that low-priced outfit, in the hands of an expert, would win plenty of matches. And there's one advantage in shooting a cheap gun: you always have material for alibis. Of course a lot of fellows don't care to fuss with equipment, but the idea that a good scope is out of reach of the ordinary beginner, is erroneous. I can buy a new four-power scope with click mounts for eight dollars, and I can buy an objective lens attachment to boost it to ten-power, for six dollars. These may not be the last word in optical achievement, but they will do mighty good work. And there is hardly a big match which does not include some iron-sight programs.

Then there is the tyro award for ambitious amateurs, and nearly all matches include tyro awards. There is also a new program of matches limiting the higher-priced outfits. These are all in recognition of the amateur and the ordinary fellow with a lean purse.

There could be many more matches devised for the amateur, of course, and that is the thing to work for. Create more matches among ordinary shots. Not that the amateur should shun big matches if he can attend, for there's an education in it for the fellow who goes to learn. And there's a lot of satisfaction in competing with those experts, too, on their own ground, asking no favors. And then, too, luck enters in frequently, and I've seen rank novices pin the ears of several experts on matches. In fact, I've had that experience myself. Let a little hard luck hit the expert, with a little good luck for the amateur, and the amateur walks off with the gravy.

I've never been able to attend any really big matches, but I shot in one wherein several good shots were entered. One man in particular I remember, who had years of experience and a rifle with a hand-made barrel and a sixty-dollar scope. He had been the national champion in the prone gallery matches for two years. It didn't look as if we had much chance, but in the 100-yard Buddy event we got lucky and won first place (and I wasn't teamed with an expert, either—just a young fellow who had been shooting for less than a year). Then I attended a pistol match not long ago, where two of the national experts were entered.

(Continued on page 33)

TWIST AND BULLET SHAPE

An evaluation of two characteristics which bear heavily upon accuracy in rifles

By BERT POPOWSKI

THERE IS LITTLE reason to suppose that any one man is unconditionally qualified to write with authority on all phases of rifle construction and performance. Thus there is need of a mediator when two riflemen of unquestioned ability and integrity claim results of equal excellence while using widely divergent equipment.

Frequently the claims of one or the other of these experts lacks the detailed information and the exact language to allow it to be properly coordinated and evaluated. The sportsman who puts his trust in these quasi-scientific writings may be a sadder and a wiser man a year hence, but that won't recoup the finances of a hunt that was a year in the making.

The hunter-marksman who can afford only one high-power arm wants it to be a rifle with which he can satisfy all of his shooting desires. That implies near-perfect performance with a variety of bullets, a condition that is all but impossible.

Experts and tyros alike refer to the necessity of using a given twist of rifling to insure the greatest accuracy with a given weight of bullet in a given caliber. This habit of thought has become so universal that no one has questioned it for a long time—for too long a time.

At the present writing the .22-3000 Lovell is one of the most discussed calibers. One authority states that he gets the best accuracy in this caliber through the use of a 55-grain bullet in a barrel of 20-inch twist. Another expert is equally positive that a 12-inch twist is ideal for the 55-grain bullet, and cites examples and produces groups to prove his contention.

There is no reason to doubt these two gentlemen. The answer to this confusion of conflicting, though excellent, results lies in the detail that has been ignored—bullet

shape—since a host of other riflemen claim merit for all the twists in between those cited.

Specifically, these two authorities do not state that the 20-inch twist used a 55-grain Sisk Hornet bullet, while the 12-inch twist used the 55-grain Sisk Express Spitzer. The former has a very blunt nose, is nearly cylindrical, and is soft jacketed; the latter owns to a six-caliber head and a hard jacket.

The above paragraph holds the key to the problem. The important principle governing the selection of a bullet which will be most accurate in the twist at hand can be stated as follows: *A bullet of plain cylindrical form, relatively short and flat at both ends, requires the slowest twist. At the other end of the scale a bullet of flat base and the longest possible point—from six to ten calibers—will require a rapid twist.* A twist of from 30 to 60 inches will suffice for the former bullet shape—in any caliber—while the latter will require a twist of from 6 to 14 inches.

Going back to the .22-3000 Lovell: the 12-inch twist would probably handle the 55-grain round-nosed bullet rather well, while the 20-inch twist would have difficulty in forming presentable groups with the six-caliber-head Spitzer. Moreover the round-nosed bullet in its best twist would be more accurate than the Spitzer in any twist, although in a 12- or 14-inch twist the latter would register the greater number of hits through its superior wind-bucking.

The weight of the bullet or its caliber, as such, have nothing to do with the rate of twist required to insure accuracy, at least within limits so wide that any exception can be disregarded in practical application. The shape of the bullet is the important factor in determining the required twist.

(Continued on page 33)

Barrel-twist scale. Numbers represent rate of twist in inches. Corresponding bullets are, left to right: 117-grain .25-caliber; 172-grain boat-tail .30-'06, and 100-grain .25 Peters protected-point; 160-grain .30-30, and 70-grain .22; 55-grain Sisk Spitzer .220 Swift, and 100-grain .25 W. R. A.; 55-grain .22 Niedner, and 180-grain .351 S. L.; 29-grain .22 short; 200-grain .44-40



BRIDGEPORT, CONN., APRIL, 1939

Rifle *Remington*

SCHWEITZER WINS POPE OFFHAND CHAMPIONSHIP

Scores 1240 to win title for fifth time

NEW YORK, N. Y.—Five times William P. Schweitzer of Hillside, New Jersey, has entered the Annual Indoor Offhand Match held by the H. M. Pope Offhand Rifle Club at the indoor range of the Manhattan Rifle and Revolver Association of this city. And five times, Bill Schweitzer has won the event! A score of 1240 did the trick this year... the sixth year the match has been held. Arthur Hubalek was second with 1231 and J. C. (Bud) Lippencott third with 1226. The match consists of 50 shots offhand at 50 feet. Schweitzer used standard Kleanbore ammunition to win the event.

OFFHAND POSSIBLE BY JONES

From Corbett, Oregon, comes this exceptional target—a composite of a 100 x 100 made off hand at 50 feet by Guy Jones of that city. "Palma Kleanbore" was the ammunition.



Winona Snipers Win Southern Minnesota League Championship

WINONA, Minn.—The Winona Snipers Rifle Club of this city won the Southern Minnesota League title for the third time since 1937. In their last match against Owatonna, they won by a score of 3807 against 3771.

The Snipers conducted rigid tests of ammunition, which resulted in a switch of the entire team to Remington Hi-Skor ammunition. They have used Hi-Skor in all their matches this year.

Renton Wins Pistol Titles



Sets new pistol record

SOUTH RIVER, N. J.—Louis A. Renton of this city set a new record in winning the U.S.R.A. Match H, Novice Fast Fire, in the Outdoor Championships for 1938. The course is the Standard American, 25 yard timed fire—5 shots in 20 seconds—25 shots in 30 minutes. His score of 247 x 250, made with Kleanbore, was one point better than the old record.

Renton also won the National First in the Pocket Revolver Match, shooting Remington .38 caliber Mid-range ammunition.

POSSIBLES and IMPOSSIBLES

by FRANK J. KAHRS



Our old friend, C. E. Bollstrom from South Bend, Indiana, showed us a group the other day at 100 yards out doors with a .25 caliber pet outfit and his own muzzle and elbow combination. The group measured .5625" horizontal and .4375" vertical. How's that for close grouping?

We have sent Victor Baltazar of Manila, Philippine Islands, a 10X brassard. He recently scored 497 x 500 with 37 X's over the Dewar Course which is good going in any man league. He won ten medals and a silver cup with Palma Match, and has not topped it off with a 10X at 50 yards. A 400 x 400 is next.

The Allentown Shooters recently fired a 15-man Postal Match with the Club of Birmingham, England, and won the match 2980 to 2973. They have won 32 out of 33 matches during the past four seasons—good going. Maybe it is because quite a few of the boys shoot Palma Match and Palma Kleanbore.

There is a chap up in West Roxbury, Massachusetts, by the name of Frank Bartelle, a member of the Norwalk Rifle Club, who gives a good example of how to improve your shooting by getting a Model 37 and almost immediately increasing his average so that he is now tops on the team. As a matter of fact, in the first 10 targets shot after he got his new rifle, there were 9 possibles and a 199.

The other day we awarded a 400 brassard to Mr. E. H. Ferrer, a regular member of the National Rifle and Pistol Association of the Philippines, because in a match he scored 400 x 400 at 50 yards. This was with some Palma Match VEEZ 36 ammunition.

As we write the last paragraph for this column this month, we pack our bags with light clothing for a pilgrimage to a few weeks in the South, where we are told there is a summer for those who seek it. On our way we will stop over for the two-day shoot known as the Atlanta Metropolitan Smallbore Rifle Matches sponsored by the Chattanooga Rifle & Pistol Club. From there we will head for St. Petersburg for the Eighth Annual Mid-Winter Shootout which "Mike" Bridgland and his merry men will preside. Next day we will rest and bask in the sunshine of the Gulf and then we will help "Smitty" Brown with his shoot. We also heard that over in Cuba they are planning pistol shoot. We could be easily persuaded to fly from Miami to Cuba.

THERE'S ONE IN EVERY CLUB... THE FRIENDLY SOUL



MORE SHOOTERS EARN 10X AND 400 BRASSARDS

FINE GROUP BY BICKERS

Chet Bickers made this 10X at 100 yards indoors in a Buffalo match. "Palma Kleanbore" was the ammunition.



MOREHOUSE GETS BRASSARD

Guy Morehouse of Poughkeepsie, N. Y., made this splendid 10X possible at 100 yards with Palma Match.



MADE WITH HI-SKOR

A 10X at 100 yards by K. F. Smith of Waterbury, Conn., made with Remington Hi-Skor ammunition.



10X IN MATCH

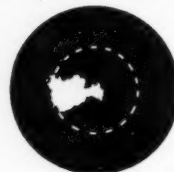
Robert J. Sinek of Pittsburgh, Pa., shot this at 100 yards in an Allegheny County Match. Palma Kleanbore.



Unfortunately, we have so many fine 10X targets that we cannot show them all. Mrs. M. Berry of Niagara Falls, N. Y., sent us a splendid group made at 100 yards with Palma Kleanbore. George Smith of Los Angeles, Cal., sends another, made at 50 yards with the same ammunition. "Palma Match" shooters who earned brassards include Louis Winston of Ottawa, Ill., W. Ambrush of Bethlehem, Pa., Earl Mehaffie of Dayton, O.,

Mrs. Edith Myers of Cleveland, O., Bud Wickersham of San Francisco, and J. Paul Jones of Bradford, Pa. All these at 100 yards. We also have a 19X possible at 50 yards by Ned Moor, another 19X possible at 50 yards by S. B. Bolling of Birmingham, Ala., made with regular Army issue Kleanbore (he also sends a 10X at 50 yards, iron sights, with Palma Kleanbore), and a 10X at 50 yards by Henry C. R. Akin, made with Kleanbore.

THE TARGET OF THE MONTH



They don't come better than this 10X possible, made at 100 yards by C. E. Burkhart of the Volunteer Rifle and Pistol Club, Knoxville, Tenn., with Palma Kleanbore. On the same day, Mr. Burkhart fired a 95 and a 94 in a Navy Match Course at 200 yards, any sights, offhand!

Send "hot" targets to Frank Kahrs, Remington Arms Co., Inc., Bridgeport, Conn.

TRIGGS WINS NEW YORK METROPOLITAN TITLE

NEW JERSEY SHOOTER TAKES PRELIMINARY AND CHAMPIONSHIP MATCHES...
SCORES 212 CONSECUTIVE TENS... USES "PALMA KLEANBORE" THROUGHOUT



HERE'S THE WINNER AND HIS TARGETS!

At left is a composite target of 1249 x 1250 score with which Ransford D. Triggs of Madison, N. J., won the New York Metropolitan Preliminary Match. At right is a composite of his winning 500 x 500 targets in the Championship event.



OKLYN, N. Y.—When the final match of the 18th Annual Indoor Shoot of the Metropolitan Rifle Club ended, Ransford D. Triggs of Madison, N. J., stood out as the number one marksman of the Metropolitan area. Triggs' remarkable performance included a 500 x 500 victory in the title match, and a 1249 x 1250 victory in the preliminary. He collected 40 X's in the match and 100 in the Preliminary.

Two possibles in team events

In addition, Triggs was a member of the winning Madison, N. J., Rifle and Pistol Club team in the 4-man team event, turning in a perfect score. He scored another possible in the 2-man team event, in which he and his partner placed second.

Triggs' total for the three Sundays of the match includes an unfinished run of 212 consecutive tens at 100 yards!

In all of his shooting, Triggs used Palma Kleanbore.

We offer our sincere congratulations to "Rans" Triggs for his splendid demonstration of top-notch shooting. And may we also point out that it requires the finest kind of accuracy and uniformity in ammunition to achieve such accurate shooting. Incidentally, last year's Metropolitan was won by Jerry Hillborn with Palma Match ammunition.

This Handgun Game

By WALTER F. ROPER

NOTE: "This Handgun Game" is a new department which is being inaugurated with this issue. It will appear regularly each month hereafter, and will undertake to do for the handgun shooter what The Old Coach's Corner is doing for the rifle shooter. Walter Roper, who will conduct this department, has a vast fund of handgun knowledge and experience to draw upon, and we know of no one better fitted for the job.—Editor.

Getting Started with a Handgun

IF YOU ARE ONE OF THE MANY men and women who plan to take up pistol shooting for the first time this spring, you will find that a good degree of skill can be developed in less time than is required in most other sports; and furthermore, you will be able to enjoy the pastime for more years than practically any other. To get the greatest pleasure however, play the game for the fun of it—not just to win. Do your best, take your lickings and your wins as they come, and forget there is such a thing as an alibi.

Probably many of you have already obtained, or at least decided upon the gun you will use, and any good gun will do, although your progress will be faster and cost less if you start with a .22. If you haven't yet bought your first gun I suggest you consider the kind of shooting you will want to do as time goes on, and start with the kind of gun best suited to it. Handgun shooting used to be a matter of separate "slow fire" matches with either a long barrel single shot or a revolver, and "time" and "rapid" fire matches with a revolver. Of course matches of this kind are often shot nowadays but the trend is to a match which includes a slow fire score, a time fire score and a rapid fire score—all fired with the same gun. It is called the "National Course" because it is the same as is used in the National Matches conducted by the War Department each year at Camp Perry for determining the standing of individuals and teams. This match, originally planned for the service pistol, is now also shot with both .22 and .38 caliber guns and has become the most popular of all pistol matches.

The chances are that you will want to shoot the National Match Course, first with a .22 and later with a .38 revolver and perhaps the .45 automatic, and this should suggest the proper gun with which you should start your shooting. If you favor the revolver, start with a .22 that is built on the same frame as the .38 you will want later; but if you think the .22 caliber will be all you want before the big gun, start with one of the new .22 automatics.

Many "old timers" will say that the single shot is the only suitable gun for the beginner but I don't think that is correct. The Colt Match Target Woodsman and the new Hi-Standard score just as well and are no more difficult to learn to shoot, and as they are unbeatable for the time and rapid shooting also, why not start with one from the beginning?

In revolvers we now have duplicates of the .38 caliber guns in .22 caliber, and the slow fire scores being made with them prove that they need mighty little handicap from the single shot. The one real argument against the automatic and revolver as an arm for the beginner is the matter of safety, and that is eliminated IF THE BEGINNER WILL SIMPLY USE THE GUN AS A SINGLE SHOT AND LOAD ONLY ONE CARTRIDGE AT A TIME.

Now for the definite guns for you to consider. Let's suppose that you prefer to follow the usual recommendation and start with a single shot pistol. You won't make

any mistake—you will simply have to learn to shoot a different gun when you tackle the National Course. There are only two guns of this type being built today in the U. S., the Colt Camp Perry and the Harrington & Richardson USRA Model. The Camp Perry is built on the same frame as the Colt Officers' Model revolver which makes it a very logical choice for the man who plans later to take up revolver shooting, as the weight and balance are very similar to the Officers' Model. The Camp Perry has an eight inch barrel, a fast action and has, of course, the same high quality that is common to all Colt guns. The H&R Single Shot is a different proposition for it was designed entirely for ultra accurate slow fire shooting, and for that purpose it is the most highly developed arm yet made in America.

If .38 caliber shooting is your ultimate goal I would recommend starting with a .22 caliber revolver in order to have all the practice possible in using an arm similar in balance, and calling for the same "thumbing" required with the .38 in time and rapid fire. Therefore, consider the Colt Officers' Model .22 caliber, or the Smith & Wesson K-22. Both of these guns are the very acme of fine gun building, and either will shoot far more accurately than any shooter can hold them. The Colt is a bit heavier and is liked by many because of that fact. Personally, I believe that both of these guns can be greatly improved by the addition of a stock that really fits the shooter's hand—and there are several different makers who can supply a grip that will make control of the gun much easier.

One other gun deserves consideration if .22 caliber shooting with a revolver is your only goal. That gun is the H&R Ultra Sportsman—a gun that is in many ways more modern than any other, having a speed action, short cylinder, wide cocking spur and interchangeable grips. It isn't like any .38 caliber gun but is certainly excellent for the man who plans to shoot a .22 and wants a revolver.

Finally, if you feel that .22 shooting over the "National" will answer your needs until you tackle the .45 automatic, then by all means start your shooting with either the New Colt Match Target Woodsman or the latest Hi-Standard automatic. The first of these guns gave ample proof at the National Matches at Camp Perry last fall that it had single shot accuracy, and was simply unbeatable in the Time and Rapid matches, and the Hi-Standard is also becoming exceedingly popular with expert marksmen. If the cost of a new gun is a bit more than you want to invest, consider the purchase of a good used gun of the same model, have it gone over by the maker, and you will be ready for competition with the best.

No matter which gun you buy make it a rule to use it only as a single shot until you have acquired sufficient skill to average at least 80 x 100 at slow fire at either 20 or 50 yards. That will make the revolver or automatic just as safe as a single shot. Stick to this rule and all will be well.

Next month I am going to begin describing a method of learning to shoot that has helped a great many beginners make rapid progress.

(Continued on next page)

Sight Adjustment on Handguns

Some handgun shooters have mighty funny ideas about adjusting sights. Here are two true stories that will show what I mean.—Chap No. 1 recently brought me his brand new Match Target Woodsman and a target he had made with it. The group was a beauty but was a good 2" low and 3" to the left. The target would have counted at least 94 if the group had been centered and I thought he wanted to know how much to move his sights to put him in the centre. Imagine my surprise when he said the sights were all right, had been set by the factory as a special favor, and what he wanted to know was what he had done to make the group centre way out there! I tried to tell him that no one could adjust the sights for him—that that was his own personal job, but he wouldn't consider changing those factory adjusted sights. I suppose he thought I was kidding when I told him that the only other way to cure his trouble was to hold off or to pin an "aiming" bull to the back of a target 2" above the regular bull and 3" to the right of it, and count his score on the regular bull.

The true story of chap No. 2 starts the same way. He brought me his gun and a target, only on his target the shots were all over the paper. He wanted to know how to adjust the sights so his shots would go into the ten ring! Said he'd tried just about every possible adjustment but hadn't hit the right combination. He was a screw driver specialist without any doubt. I don't think he liked my suggestion that until one learned to make groups somewhere near the size of the bull there wasn't any need of worrying about adjusting the sights to centre the group.

Sight adjustment is all right and quite proper IF and only if you are grouping your shots, and the change in adjustment should be made to correct the location of the *centre of the group*, not of any particular shot. Most shooters find that three shots are necessary—and are better than either more or fewer—to determine how much a change in adjustment has moved the centre of the group. They also find that it is a good idea to adjust for somewhat less than would seem necessary, as in handgun shooting it is easily possible to make some change in stance that will affect the position of the group—to say nothing of the effect of changes in light. It is a pretty good plan to go easy with the screw driver.

The Basis of Sight Adjustment

One of the things I think a manufacturer should put into a descriptive folder on any gun having adjustable sights is the amount the sight adjusting screws have to be moved to cause a movement of 1" in the group center at fifty yards. Anyone can figure from that information how much to move to get a required change at a shorter or longer distance, but without it sight adjustment is pretty much a matter of guess work.

If, for instance, you are shooting a Match Target Woodsman it is well to remember that *one sixteenth of a turn* of the elevating screw will move the point of impact one inch at fifty yards, while *a quarter of a turn of the windage screw* is needed to move the group 1" laterally. With any screw adjusted sight be sure, however, to take up the back lash before estimating that fractional turn, as otherwise you won't make any change at all!

SOMETHING NEW IN PISTOL RANGES

(Continued from page 8)

greater speed than ordinarily effected when competitors, scorers and target boys hustle down to the stationary-type frames on their own protesting dogs.

The mechanism within the unit for turning the targets themselves is housed in a metal case mounted in the middle of the framework. The principle employed is that of a vacuum, with a small air compressor electrically operated making up the principal parts. It is so arranged that the targets can also be manually operated.

We inquired as to the cost of such a lay-out. The estimated cost of the target construction, the mechanical anatomy, was something like three hundred and fifty dollars. This civilian club had only eight hundred dollars to work out this marvel of range accommodations, and with it they improved their club house, installed electric lights and power and modern plumbing, and completely changed their firing line and backstop.

The Palmetto Pistol Club, a civilian group with an imaginative club president for a leader, getting off to a late start with their intended improvements because of limited means, working day and night, every man and woman of them employing every spare minute to complete the project before tournament time—we say they deserve the admiration and the applause of every target shooter in this the shootin'est country in the world. Clem Theed, their president, conceived and designed and helped build this unique system. When we asked him about it he modestly said every member of the club deserves the credit. We found him still at work, hollow-eyed and pounds underweight as a result of this devotion to the huge task of last-minute construction, but pleased over the enthusiastic acclaim of

those attending the matches. A. T. Kelly, the tournament manager, was working right along with Theed, and in there pitching for the success of the second Flamingo.

And in this connection, a brief summary of the matches may well complete the picture. The Detroit Police team living up to the predictions and catching on to the spirit of these things we have been telling about, accounted for what will undoubtedly be three new records. They fired a score of 1107 in the .45-calibre four-man-team championship over the national match course; a 1170 score in the center-fire four-man-team match over the Camp Perry course; and one of their number, Harry Reeves, scored a 200 possible, going out on his next added string of five shots, in the center-fire timed-fire match. Charles Askins, Jr., getting into the groove, also joined the record breakers by chalking up a 197 for the .45-calibre timed-fire match. These four records will be presented before the newly appointed sub-committee of the National Rifle Association's Executive group, and duly recommended as new world marks.

The Flamingo .22-calibre pistol championship, an aggregate of the opening four .22-calibre events, was taken by Harry Reeves with an 866 over Mark Wheeler's 864. The Flamingo center-fire championship for the Ray E. Dodge trophy, an aggregate again for the second day's squadded firing, was taken by the inevitable Al Hemming with an 861 total. Reeves came next with 858. The .45-calibre championship, another aggregate of .45-calibre matches, was won by Reeves with 838 over Hemming's 833. This gave Reeves the All Around Title. Hemming was second, and Charles Askins third.

THE WRECKERS

By A. CLUBMEMBER

THE PHYSICAL EQUIPMENT of our rifle club leaves little to be desired. We are incorporated, and the corporation owns several hundred acres of land pleasantly situated in a wide, shallow valley. There the range is located. We have a five-target pit, covered, concrete-walled, fitted with the best of target lifts, and also furnished with an oil-burning heater for the comfort of the pit detail in the winter. The backstop of both big-bore and small-bore ranges is the natural one of the north rim of the valley. On the big-bore range there are leveled firing points at two-, three-, and six-hundred yards. Two hundred yards south of the pit stands the clubhouse, an excellently built frame structure fittingly equipped for winter shooting, with five windowed ports in the north wall for offhand shooting and an equal number of doored ports at floor level for prone work. There are two tables specially designed for benchrest shooting, so located as not to interfere with shooters using the windowed ports, and the wall at these locations is pierced with smaller closable ports for rifles and spotting scopes. There are rifle racks around the walls, and racks for target frames, a locker for the storage of loose equipment, and a number of chairs and benches. There is an oil-burning heater, most efficient for its purpose. Midway between the cabin and the pit, one hundred yards from the ported north wall of the cabin, the clay removed from the pit excavation has been piled to form a back-stop for the hundred-yard targets. Another mound of this same excavation material, built up a short distance west of the cabin, back-stops the pistol range at fifty yards and permits pistol-practice from the cabin when the weather is too cold or too windy for outdoor shooting. There is a building near the pit for the storage of A and B target frames, and another building near the clubhouse designed and equipped for the preparation and serving of meals. There is a cement-and-stone semi-pit for shot-gun traps, and there is also a fully equipped skeet field. Neither of these scatter-gun areas, however, has been much used; this is not a shotgun country. Another part of the range is furnished with a running-deer outfit for shooting at 100 meters. There is a gofort range, almost never used and lately fallen into disrepair, but, nevertheless, originally well equipped. The Dewar range adjoins the big-bore range to the east. There is a deep well of excellent water, with a windmill, and a tank for the storage of water which is used for the irrigation of the numerous trees planted about the range. These, now maturing, make a most pleasant break in the otherwise treeless monotony of the valley.

This club property is located somewhat less than five miles from town; three miles as fly the ships of the north-and-south airline which crosses the range. The community has a population of about twenty-five thousand. There is a brigade army post near the town, average population in the neighborhood of five thousand soldiers. From this military population the club has in the past drawn a considerable portion of its membership. It also provided many of the competitors in the military matches held on the club range. A recently inaugurated annual four-day program of military and other matches, open to civilians, is held on the post's most excellent range, and promises to stimulate interest in rifle and pistol marksmanship among the police, militia, and civilians of the entire region. The town is rifle-conscious, partly because of the proximity of the military post, partly

because of the nature of the country (big game hunting areas being easily accessible, for even week-end trips), and partly because there is not a great variety of other outdoor pastimes. There have been several shooting clubs in the vicinity in past years. Ours is now the only one not entirely inactive. A tremendous amount of interest-inspired work went into the building, equipping and maintenance of our range and the organization of the club. The labor involved was wholly volunteer, and the builders wrought well. The original membership was large, nearly a hundred, all enthusiastic, all looking forward to years of indulgence of their chosen sport under conditions which in the beginning were extremely favorable. Theoretically, then, the club *should* be eminently successful. There is adequate equipment, there is available personnel to provide unlimited shooting throughout the year, and there is the stimulus of the annual program at the Post.

During the first three or four years of the club's existence activity approached expectation. There were matches weekly; when none were scheduled, there were always numbers of riflemen and pistoleers on hand who could be depended upon to engage in impromptu matches. There were weekly turkey shoots throughout the pre-holiday season. On nearly every Sunday during the winter months, regardless of weather, Scheutzenfests and bull-gun matches at two hundred yards from the clubhouse windows occupied the attention of those interested in the heavy-barrels, these holdem-and-squeezem experts using two or three of the ports, while military rifles cracked out the twenty-hot strings of Navy matches at the remaining openings. As the warmer days of Spring arrived, friendly competition in preparation for the early-July State Matches kept the hopefuls busy at all the various firing points. Following the State Matches, there was the Camp Perry team to whip into shape. Interest ran high during those too few years. On the occasion of scheduled matches, dozens of local marksmen turned out; the army post was well represented with teams and individuals, and from each of several neighboring towns came two, three or more shooters. On Saturday afternoons, and on the long Summer evenings, the premises were thronged with practicing riflemen and pistoleers. On any holiday there was a turnout sufficient for an impromptu match or two or more. All signs indicated a most prosperous and successful club. As an illustration of the spirit prevailing in those days: We shot an important cup match on a day in January when throughout the day the temperature did not rise above twenty degrees *below* zero. The clubhouse was crowded with shooters, and despite the severity of the weather, several marksmen came across the mountains from a town fifty miles away, *one of them on a motorcycle*.

The club is now seven years old. The equipment is still in almost new condition, and it is well maintained. Few of the original members have left the vicinity. Many retain their memberships in the club, for the annual dues are low. But—there is little shooting done nowadays. A scant handful of marksmen use the range for practice. Competitive activity has dwindled to nine or ten or less scheduled matches yearly, and during the past three seasons even those few matches have been too sparsely attended. On a Saturday afternoon recently the writer went out to experiment with a home-made sight. There was one Army officer banging

away in a desultory fashion at the pistol-butts, and a single rifleman, sighting in a hunting rifle at two hundred yards. The following day, the writer returned to test his sight corrections and found three members of the club present, one of them a recently accepted pistol-shooter. Each of these two early autumn days was a perfect one for shooting; bright and calm and warm. Three years before, on such a week-end, there would have been a waiting line at every firing point, and a series of ten-cent "pot" matches in progress.

Something is seriously wrong. Splendid equipment is being utilized to but a small fraction of its possibilities, or not at all; a large and enthusiastic membership has dwindled to a few hard-bitten hobby-riders. Why? We could, perhaps, have taken forewarning from the fate of our club's predecessor. That club, sponsored by the Athletic Association of a great transportation unit, was also adequately equipped, and its membership, too, was large and enthusiastic. It is now totally inactive, after a sharp and brief period of decline. Its failure is attributable *in theory* (a fallacious theory, in the writer's opinion, as will presently appear) to the fact that soldiers from the post were forbidden by the military authorities to shoot on its range because a county road was opened up across it. When our club was organized the membership of the older club deserted it and joined ours almost en masse.

While the decline of interest in our club was not a gradual process, neither was it such a sudden cessation of activity as could be laid to any one cause. Rather, it came through a single season of Fall and Winter shooting, beginning with the second or third turkey-shoot in the middle of Autumn. The first was well attended; in the next, there was a noticeable decrease in the number of competitors, and in the third, the attendance was cut to a few regular members of the club and not more than ten non-members. Two military matches, regularly held during the balmy Indian Summer period, were that year much less successful than on previous years; the second rather worse than the first. Winter, with the usual course of weekly Scheutzenfests and bull-gun matches, came on, and, as had occurred during the turkey-shoot season, after the first match attendance declined. By midwinter so few marksmen were coming out that the Navy matches, always previously held in conjunction with the heavy-barrel shooting, were discontinued. There was no revival of interest with the coming of Spring. A few, rarely as many as a dozen, came to the range each week-end, but there were no more impromptu matches. It was not worthwhile to hire a pit crew. The State Matches came and went; the Camp Perry team was chosen, and those few who made the team from this area did their practicing unaided by the less skillful. Pistol-shooting in all its branches declined until only one or two die-hard enthusiasts of the hand-gun were to be seen upon the range, and those at widely separated intervals. In short, the bright beginnings were dimmed, almost to extinguishment, and today our range is the resort of less than a score. Sometimes, on special occasions, a dozen appear, but more often there are only two or three.

There are a number of reasons advanced for the failure of this club, for "failure" is the only word that can be applied to the collapse of the early interest so manifest in all its activities. Many of the reasons argued in the rare discussions of the conditions prevailing are so trivial or so fallacious as to be patent avoidances of the true causes. Among other things, and cited only by way of example, it is said that the country is too windy for match shooting; that the range is too far from town; that the country is too open for shooters to be satisfied with the confinement of a range, when, without cost other than for ammunition, they

may go almost anywhere on the prairie or in the nearby mountains and shoot all they care to, a condition which does not obtain in more settled areas. All three, and others like them, approach the preposterous. True, there is wind on occasion, but it affects all alike, and ordinarily merely spurs an interest in wind-doping. Only rarely is the wind too strong for outdoor offhand shooting. It did not affect attendance during the first three years of the club's existence. The distance was no deterrent in the club's palmy days, nor was a distance fifteen times as great a deterrent to rifleman from three neighboring towns, each approximately fifty miles away; witness the occasion of the sub-zero January day before described. As to the availability of free shooting in the mountains and on the prairies; that is a point, but the fact is that such shooting is very rarely indulged in, except for an occasional trial of skill on the person of the elusive jackrabbit, which abounds in the region. But that kind of shooting was done even in the club's heyday, and as a variant to target-shooting. The men who once warmed their guns upon our range now permit them to remain cold in their gun-cabinets at home, save for a brief period each Fall when they bring their sporters to the range for sighting-in preparatory to the hunting season. Others of a score or more of proffered reasons why the club is not doing so well can be disposed of with equal facility. They are analogous to the not unquestioned explanation of the downfall of our club's predecessor; that the opening of the county road across the range and the consequent withdrawal of Army support was fatal. True, after it was done it was a handicap, but a healthy club would not have permitted the establishment of the road. In this country, county roads are largely political footballs. A very little pressure by a smooth-working organization would have established that right-of-way along a section line a mile to the south of its present location, and there need have been no interference with shooting. That club was even then moribund. The depression, strangely enough, is not blamed for our club's decline; its palmiest days were attained during the depths of that period, and few of the members were affected to any great extent.

The true reason for our present unfortunate situation, as this writer sees it, and in so far as it can be pinned to a single factor, is the almost unbelievable one of lack of competition. Few of the shooters who formerly congregated in the clubhouse on week-ends admit it even to themselves, and the very few who are in the main responsible for the condition laugh the idea to scorn. "What!" they say, "No competition, when some of the best shots in this country belong to this club?" Their scorn has just enough basis to discourage any sincere attempt at refutation. But the fact remains that the club is dominated by a half-dozen veteran rifleman, who possess a degree of skill far beyond that of the best of the common run of members, and these half-dozen have, perhaps unconsciously, discouraged the ninety or more who are not in their class. Club affairs are in their hands, and they regard as a waste of *their* time, and imposition upon *their* privileges, any suggestions as to qualification, classification, or handicap shooting. They are most affable men, quite genuinely liked and respected by their fellow members of the club. Were they otherwise, it would be possible to oust them from control and institute an administration which would have some regard to the possibilities of a large and enthusiastic membership. As it is, we, the common run of shooters, prefer not to offend our expert friends, and we stay away in great numbers.

It might be supposed that the claim of lack of competition, so scornfully derided by the experts, is far-fetched; that we tyros should welcome the opportunity to shoot against those whose skill is greater than ours. But "compe-



Typical Model 86 Winchester rifle, .45-90 caliber

MORE ABOUT THE 86

By W. JOSEPH O'CONNOR

THE 1886 WINCHESTER repeating lever action rifle, designed by John M. Browning, was first offered in .45-70 caliber to the shooting public in 1886. It obsoleted the reliable but weak breech-action 76 rifle that had a 73 action adapted to heavy black powder cartridges, of which the .45-75 was the most popular. The 86 was manufactured until 1936, when Winchester replaced it with their Model 71, an improved 86.

The entire design was not original, but Browning's genius combined his own ideas with the best features of earlier model Winchesters, adapted the Sharp's type breech locking system to a repeating mechanism and produced a rifle that most sportsmen consider to be the best lever action repeating rifle ever made. The breech mechanism was designed for black powder, but only required better steel to adapt it to powerful smokeless powder loads. The 1886 Winchester, with a few minor improvements and a change in model number, and the Colt Single Action revolver, are the only firearms of frontier days that are still made.

The 86 was made in light and heavy models, solid frame and take-down, with barrels of various lengths. A local gun collector has a .45-70 with a 32-inch barrel. The solid frame model with rifle buttplate, 26-inch octagon barrel and full magazine was the most popular style. The carbine model apparently was not much used as it is seldom seen or advertised. In Eastern Oregon, judging from the 86 rifles still in existence, the .45-90 was the most popular caliber.

The tensile strength and elastic limit of steel used in 86 rifle barrels varies. According to Winchester catalogue No. 77, published in 1911, "The 86 extra light weight model .45-70 and the .33 in all styles have an elastic limit of over 90,000 pounds and a tensile strength of over 110,000 pounds to the square inch. The .45-70 standard and carbine model, .45-90 and .50-110 calibers have an elastic limit of over 40,000 pounds and a tensile strength of over 60,000 pounds to the square inch." No information is given about the elastic limit and tensile strength of rifles in calibers discontinued before this date—.38-56, .38-70, etc., but they will not exceed the latter figures. Handloaded ammunition, except in the .33, should not exceed 35,000 pounds pressure.

The 86 was chambered for the following black powder cartridges—.38-56, .38-70, .40-65, .40-70, .40-82, .45-70, .45-90, .50-110 and the smokeless powder .33 cartridge. After the introduction of smokeless powder and metal jacket bullets, the black powder cartridges were also loaded with smokeless powder and metal jacket bullets. Except the smokeless .33 which has a flat trajectory up to 200 yards, these cartridges have a high trajectory, like all black powder cartridges, at ranges over 100 yards. In these calibers hi-

velocity loads develop more energy, which is useful when hunting dangerous and hard to kill game at close range, and reduce the trajectory height about 50%. The guaranteed accurate range of the discontinued factory hi-velocity loads was 100 yards. For deer, black bear and elk, factory loaded ammunition or ammunition loaded to factory ballistics with black powder or Hercules Sharpshooter smokeless, will prove satisfactory.

The Model 86 cartridges were developed for American game, which is soft skinned, and are not as powerful as similar English black powder cartridges that were designed for African and Asiatic shooting. The heavier calibers—.45-70, .45-90, and .50-100 and -110, are sufficiently powerful for any big game except, possibly, elephants. A few hunters did effectively use the .45 and .50 calibers on African and Asiatic soft skinned game. Winchester, in a folder announcing the new 71, made the following statement about the 86: "In caliber .33 its record includes all African big game within the scope of its power. This takes in lions, all large antelope, buffalo, giraffes."

Cartridges loaded with smokeless powder and soft point bullets (except .38-70 and .40-70, which can be procured from dealers in obsolete ammunition) are manufactured by Winchester and Remington—except .50-110, which is supplied only by Winchester. In Canada, The Canadian Industries (Dominion) supply the .33 Winchester cartridge. Frequently old but serviceable smokeless and black powder cartridges can be procured, at very reasonable prices, from dealers handling this type of merchandise.

The priming composition of ammunition made before the advent of the nicked primer can usually be determined by the type of primer used. Copper primers are mercuric; brass primers are non-mercuric. Remington 86 ammunition is now primed with their No. 8½ Kleanbore mercuric primer (primers supplied for reloading are non-mercuric), and reloading these shells is not recommended. Winchester cartridges are primed with non-mercuric primers and may be safely reloaded. The Dominion .33 is primed with their No. 8½ non-mercuric primer. All recently manufactured and most old American ammunition, with few exceptions, is primed with standard size rifle primers. For smokeless powder use any of the following non-mercuric primers: F. A. No. 70; Winchester Nos. 35 or 120; Remington Nos. 8½ or 9½. For black powder, Winchester No. 35 is recommended. These primers, except F. A. No. 70 and Winchester No. 35, are non-corrosive.

Little information is available about smokeless powder loads for the .38-70, .40-65, .40-70, .40-82 and .50-110. Black powder velocities are equaled or slightly exceeded with charges of Hercules Sharpshooter powder given in the ballistic table. When loading hi-velocity charges given in

STANDARD BALLISTICS OF WINCHESTER 86 CARTRIDGES

| Caliber | Powder charge | | Bullet weight grains | Velocity ft.-seconds | | Energy ft.-lbs. | | Trajectory midway of | |
|---------------|---------------|---------------|----------------------|----------------------|----------|-----------------|----------|----------------------|----------|
| | Black | Sharp-shooter | | Muzzle | 100 yds. | Muzzle | 100 yds. | 100 yds. | 200 yds. |
| .33* | | | 200 | 2200 | 1880 | 2150 | 1575 | 1.00 | 5.00 |
| .38-56 | 56FFg | 14 | 255 | 1397 | 1189 | 1105 | 800 | 2.61 | 12.30 |
| .38-70 | 68FFg | 15 | 255 | 1489 | 1262 | 1256 | 903 | 2.05 | 11.84 |
| .40-65 | 65Fg | 15 | 260 | 1367 | 1145 | 1079 | 757 | 2.59 | 13.24 |
| .40-70 | 70Fg | 15 | 330 | 1382 | 1196 | 1401 | 1049 | 2.66 | 12.19 |
| .40-82 | 82Fg | 20 | 260 | 1492 | 1236 | 1285 | 883 | 2.40 | 11.26 |
| .45-70 | 70FFg | 20 | 405 | 1317 | 1143 | 1561 | 1175 | 2.90 | 13.27 |
| .45-70 H. V. | | 32.9 | 300 | 1888 | 1539 | 2375 | 1579 | 1.47 | 7.40 |
| .45-90 | 90Fg | 22 | 300 | 1531 | 1247 | 1563 | 1037 | 2.28 | 11.24 |
| .45-90 H. V. | | 36.5 | 300 | 1992 | 1621 | 2644 | 1751 | 1.41 | 6.63 |
| .50-110 | 110Fg | 28 | 300 | 1605 | 1250 | 1718 | 1041 | 2.17 | 10.99 |
| .50-110 H. V. | | 47 | 300 | 2242 | 1744 | 3349 | 2026 | 1.12 | 5.83 |
| .50-100 | 100Fg | 36 | 450 | 1442 | 1206 | 2021 | 1455 | 2.54 | 11.99 |

* Present factory load. Use metal jacket bullets with hi-velocity loads.

the table it is best to use new cases. In smokeless powder loads the bullets should be seated friction tight and crimped so the recoil inertia will not force the bullets back in the cases and compress the powder.

The recommended alloy for cast bullets is one part tin to fifteen parts lead for black powder calibers, and one part tin to ten parts lead for the .33. In rusted and pitted barrels metal jacket bullets seem to give better accuracy than lead bullets.

Cast bullets should be lubricated with Ideal or other suitable lubricant. If you wish to make your own, here is Hudson's formula: Four ounces of Japan wax, 2 ounces of mutton tallow, and one ounce of vaseline. Its consistency can be varied by modifying the proportion of vaseline used, less vaseline giving a harder lubricant.

The .33 Winchester, although rifles are not now chambered for it, is not ballistically an obsolete cartridge. By handloading, .348 ballistics can be duplicated. Thirty-nine grains of Hi-Vel No. 3 with the 200 grain soft point factory bullet develops 2555 ft. velocity, with 42,000 pounds pressure. This load should be used in a factory made .33-caliber rifle, and not in one of unknown heritage, because many black powder actions were later fitted with .33 barrels. Thirty-five grains of Hi-Vel No. 2 and the 200 grain

soft point factory bullet develops 2000 ft. velocity with 23,700 pounds pressure—a safe load in any 86 action. Modern Bond furnishes moulds for 145, 185 and 200 grain bullets; Ideal moulds are made for 145 and 195 grain plain base, and 195 grain gas check, bullets. Thirty-two grains of Hi-Vel No. 2 and the 195 grain gas check bullet with a seating depth of .315-inch develops 1940 ft. velocity with 21,600 pounds pressure.

In the .38-70 and .38-56, use .38-56 or .38-55 metal jacket or cast bullets. The bore diameters and standard bullet (255 grains) are identical in these calibers.

Standard metal jacket bullets are not made for the .40-70, but since the bore diameters are the same, the lighter weight .40-65 and .40-82 soft point or cast bullet may be used. Twenty grains of Sharpshooter and the .40 caliber 260 grain bullet will approximate .40-82 ballistics in the .40-70. For a standard weight lead bullet use Ideal mould No. 40392 to cast a 330 grain bullet, this mould being supplied for various weight bullets.

The .40-82 with the 260 grain soft point factory bullet and 45 grains of duPont No. 17½ develops 1750 ft. velocity. When using non-corrosive primers reduce this charge five grains. The discontinued .40-75 is a .40-82

(Continued on page 36)

The nine cartridges for which the Model 86 Winchester was adapted. All were black-powder cartridges except the .33-caliber



AT LAST!

By DAVID H. DAWSON

"EUREKA!" YELLED ARCHIMEDES when he discovered the principle of specific gravity. And, some centuries later, I too yell "Eureka!" And what have I found? Why, the type of rifle I have longed for and dreamed of these many years! A small-bore rifle of superb accuracy, flat trajectory, and constant zero—to be used for varmint-shooting. The simple and wonderful .22-3000 Lovell!

No reader of THE AMERICAN RIFLEMAN who has been looking for a cartridge possessing the above characteristics can have failed to be impressed by the numerous articles published therein anent the extraordinary merits of the Lovell. Past issues of this magazine contain much valuable information on the matter, and Henry E. Davis' article "Experiences With the .22-3000 Lovell" in the November 1936 issue, is especially interesting to the varmint hunter. An almost miraculous fact is that all these writers are in practically perfect agreement.

Many thousands of hunters like myself, who specialize in hawk and crow shooting, fervently hoped the Hornet was the answer to their prayers for a super small-bore rifle. But, splendid as it was in many respects, the Hornet did not meet all the requirements. It could be finely accurate much of the time, but was very generally of exasperatingly unstable zero. It was so erratic as to cause special comment by that well-known handloader, J. Bushnell Smith, who stated that it was one of the most erratic cartridges he had ever loaded.

He spoke the truth. I found it necessary to sight-in the Hornet every time it was taken out for hunting, or a miss on the first shot at game at any real distance was almost certain. The variations in group size with the same loads were disconcerting to any expert rifleman. Having owned five of the best Hornet rifles I could buy, and used them for more than six years with every type of factory and hand-loaded ammunition, I know whereof I speak. And the experiences of my friends who used the Hornet were precisely the same as mine.

Although I had done some very good shooting with the Hornet, its performance as above stated was highly unsatisfactory to me. Exchanging one good rifle for another did not improve the situation; and finally, in disgust, I was making diligent efforts to dispose of my entire Hornet outfit when my friend Jimmy Hunt—a kindred spirit who owned a similar outfit and fully shared my feelings—talked himself and me into having our rifles chambered for the Lovell cartridge.

Elmer Key, a very skillful young gunsmith of Chelsea, Oklahoma, said he could do the job properly; and he did. In short order he completed the alteration of our Hornets, and supplied us with cases sized in a die cut with the same reamer that chambered our rifles. The workmanship was of the highest order, and we later found that the heaviest charges caused no extraction troubles, the cases easing out of the chamber as if they had been lubricated with graphite. Incidentally, every rifle so altered by Key has given that same perfect extraction.

Jimmy had a standard Winchester Model 70 Hornet barrel and action fitted to a beautiful stock previously made for him by Key, and used therewith a Fecker 6-power target scope. My rifle was the standard Winchester Model 70 Hornet, with Lyman Targetspot 8-power scope. On each

rifle the front scope base was on the barrel and the rear base on the receiver bridge. Trigger pulls had received special attention, and were as clean and light as we could make them.

Our reloading equipment consisted of a Belding & Mull No. 26 tool and an Ideal No. 5 powder measure. Elmer ran the Lovell reamer into the bullet-seating chamber, while with a round file I enlarged the groove in the cradle of the tool so that it would take the new case; and the outfit was complete. We had a supply of Remington primers, 45-grain Hornet bullets, and No. 1204 powder. I set the measure to throw 15 grains of the No. 1204, filled a few cases, and seated the bullets out to touch the rifling. Then for the test.

Hurrying to our range near my home, we put up targets, fired a few shots to set the scopes, and began to shoot for groups at 100 yards. Pardon me if I seem enthusiastic, but before we shot up those cartridges we knew we were firing the most accurate small-bore center-fire rifles we had ever seen. Five-shot groups of 1¼" were the order of the day, with an occasional group of 1". At 200 yards it was not difficult to shoot 3" or 3½" groups. It was soon evident that the rifles would shoot better than we could hold, exceeding our fondest expectations.

With the rifles sighted to strike 1" high at 100 yards with the load mentioned, we drove around the countryside looking for hawks and crows. At ranges from 110 yards to 175 yards we blew a number of those pests nearly to pieces, shot after shot, with scarcely a miss. This shooting would have interested any varmint hunter. It excelled anything we had ever previously done.

Some days later, on a prairie-dog hunt, Jimmy and I shot 40 dogs in less than one day. The sod poodles had been fired at so often that they were very wary, and a shot at less than 100 yards was out of the question. But at 100 yards it was a simple matter to knock their heads completely off, and at ranges up to 200 yards the deadly little bullets tore their bodies wide open. A strong wind blew all day, causing considerable bullet drift when shooting across the wind, and this had to be taken into account; but the percentage of kills out of shots fired was very high, and there were no cripples.

Now, Jimmy and I are dyed-in-the-wool gun cranks, and we were still not entirely satisfied. Those rifles with 24" barrels were awkward to handle in close quarters such as from the front seat of a car—and most of our hawk and crow shooting was done from a car. Years ago we had cut the barrels of our heavy .22 rim-fire rifles to 20", with eminently satisfactory results; but how about the Lovell? We had no dope on its performance with short barrels, and our friends thought the very idea was preposterous. However, Jimmy took his courage in one hand and his hack saw in the other, and in ten minutes his barrel was just 20" long. We hustled to our range, and, using a load of 15 grains of No. 1204 and Sisk 40-grain bullet, he put five shots into a 1" group and five more into ⅝", at 100 yards. I couldn't stand the pressure, so hustling back home I cut 4" off my barrel, and returned to the range. Lying flat on the ground, muzzle-and-elbow rest without sling, I fired thirty shots; and I never knew that any rifle could shoot like that!

We later discovered that this superb 100-yard load was unsatisfactory at 150 yards and beyond, probably because

(Continued on page 36)

TWIST AND BULLET SHAPE

(Continued from page 23)

A pointed or semi-pointed bullet may be accurate at a wide range of speeds with a given twist of rifling—say from 2200 to 3500 foot-seconds or more—but the slower it travels (and spins) below the critical 2200-foot-seconds figure, the more it must approach the form of a short cylinder for accuracy.

Since the speed and spin slow down materially at the longer ranges, it follows that a bullet may be accurate in a given twist at short or moderate ranges and become inaccurate at long ranges; while a more cylindrical form would remain accurate at all usable ranges. The high rate of spin conducive to accuracy of pointed or semi-pointed bullets at all ranges may be imparted by an initial velocity so high that it will retain its minimum spin over the entire range, or by a quick twist; or by a combination of the two.

A listing of some of the qualities inherent in various bullet shapes might be in order here, always keeping in mind the rifling twist from which that bullet is to be fired. A bullet with a rounded or flattened nose is more accurate than one with a long sharp point because the latter is not so readily stabilized in flight.

However, the round or flat-nosed bullet may drift twice as much as a sharp-nosed bullet of the same weight. So the sharp-nosed bullet, especially in the boat-tail type, will have a much flatter trajectory beyond 300 yards, making it quite likely the more accurate beyond the above range.

As was stated in the December 1938 AMERICAN RIFLEMAN, the trajectory of the two will be much the same, irrespective of the weight, caliber, or shape, *up to 300 yards, if their muzzle velocities are nearly identical.*

Keeping all of these factors in mind, the prospective purchaser who wants his arm to give him the finest accuracy performance must thoroughly investigate the bullet shapes and rifling twists available in the caliber he wishes to buy. Two or three poor shots may ruin a hunt that has been anticipated for years, and the opportunity for repeating those shots may not offer itself.

If the hunter wishes to use bullets of various shapes and weights in the same rifle he must remember that the manufacturer is forced to furnish a compromise twist which will do a fair job with such bullets, but will give the best possible accuracy with only one or two of them.

The .257 Roberts is furnished with a 10-inch twist as standard, yet the writer's experience indicates that this is not the proper twist for the finest accuracy with any of the lower-priced bullets. (Since lowering the cost of shooting through reloading is an integral part of the average shooter's plan of operation, and since this article is being written to interest Mr. Average Shooter of moderate means, the lower priced bullets are of considerable interest).

The 100-grain N. R. A., a cheap and very fine bullet, and the 87-grain Remington mushroom, will show finer accuracy in a 14-inch twist than in the standard 10-inch. In fact, when the writer's custom-barreled .257 was first ordered, it drew severe criticism from the prospective barrel-maker, who hesitated to hazard his national reputation in departing from the orthodox 10-inch twist.

The 14-inch twist in this .257 will quite regularly make five-shot groups of from 1¼ to 2 inches at 200 yards—with the two above-named bullets. This performance equals the best that a fine .30-'06 Bullgun can do and is surpassed only by a heavy-barreled .250-3000, *with a 14-inch twist and using the same bullets.* The 117-grain bullet in the .257 caliber, again in the low-cost field, would undoubtedly show finer accuracy in an 8-inch twist.

Further bullet characteristics which may guide the prospective purchaser are these: a long bullet will retain its energy over a longer range than a short one, and will not break up as readily. A soft-point bullet will expand and break up and be less apt to ricochet than a hollow-point. These characteristics are built into the various bullets mentioned through the manufacturing operations, unconscious though they be.

A soft cast bullet, or a jacketed bullet with a soft jacket and a soft core, is more accurate than a cast bullet of hard mixture, or a jacketed bullet with a hard core and a hard, thick jacket. This statement presupposes all other values being correct, inasmuch as the soft bullets—jacketed or not—are not suitable for high velocities.

To sum up, the prospective buyer of a high-power rifle would do well to investigate the bullets available for the caliber he wishes to own, and then investigate their possibilities in the standard twist for this caliber. "Bullet velocity" and "bullet energy" columns in the standard ballistics handbook make impressive reading, but they are wasted unless the hunter can place his bullets in the game or in the "black."

When bullet and twist do not work hand-in-hand to achieve desired results a sadly disappointed hunter can easily believe that his new rifle has construction faults beyond righting. A thorough investigation of the possibilities of his rifle's twist with various bullet shapes will prevent the repetition of such disappointment.

THE AMATEUR'S CHANCE

(Continued from page 22)

Both these fellows have won plenty of national honors, and their pictures are common in THE RIFLEMAN. The first event was 20 shots at 50 yards. I shot my usual 74 on the first ten-shot string, and on the next target I got 87—just three points under top; and I tied one of those experts. I didn't get a medal, but I did get a mighty thrill, worth the cost of the match.

It would seem that the ammunition and gun companies are overlooking a fertile field in the amateur class. It would seem that some plan could be devised by these companies to promote, through local representatives, clubs in thousands of small towns which now offer little more in the form of recreation than pool halls and pin-ball machines. For the amateur is the guy who really burns up ammunition. He may not be able to use it in a fancy target rifle, but just get a live club going in a community, and see how ammunition sales jump.

It isn't so easy to start clubs, or to keep them going in small places. The public has to be shown that the club is an asset to the community, and potential members have to be shown that they can have more fun shooting rifles than shooting pool or crap. Welfare workers should investigate the possibilities of target-shooting organizations as a medium for uplifting social standards. Parents should be made to realize that the enthusiasm of promoting agencies is directed toward the furtherance of a pleasant, clean sport, rather than the training of potential snipers for future wars.

However, to get back to the outlook for the "amateur" shooter, and his chance in the game. The future looks pretty bright to me. We amateurs are surely in the majority, and if we work together we can surely create enough matches of our own to keep us busy and have a good time. Let's play the game for the fun there is in it. After all, the big matches aren't really the backbone of shooting. If we have to attend them and be number one man in order to get any pleasure out of it, we aren't really after the sport at all.

BULLET-FIT

(Continued from page 9)

average 10-shot group being $5\frac{1}{2}$ inches, with the majority of the bullet holes in the 10-ring, and close to the center. Later experiments with a different weight of bullet and charge of powder resulted in smaller groups, but it was still necessary to resize bullets from this mould.

Some of the lead-alloy bullets shot with reduced charges of powder in the Springfield and other high-pressure rifles were cast so large that I wondered how large the chamber neck must be, but good shooting was obtained nevertheless. Why should not an over-sized jacketed bullet shoot accurately too—with the proper charge of powder?

One winter I began getting ready for the next turkey-shoot season. I had used a rather heavy .32-20 single-shot rifle, which took its share of turks with handloads using a plain 115-grain bullet cast in an old Winchester mould. This bullet touched at only a rough spot or two in going through the .311 sizer die. So I experimented with different bullets and loads in this rifle, but that old Winchester bullet was the steadiest grouper of the lot. However, there were always two or three flyers that made each 10-shot group much larger than the average of the rest of the shots. The bullets hit in the loose snow, shooting at 100 yards, and I could trace the flyers and dig them out of the snow; and the rifling marks on them showed that they had not centered the bore truly when they left the chamber of the rifle. It looked really like a case of chamber and throat misfit. Here is where I decided that an over-size bullet that would fit tight in the chamber and enter the throat more snugly, should do better grouping.

So I bought, at a fancy price, one of the new rattle-block bullet moulds that were just coming into style then. This bullet had a very long bearing and a short, blunt point. It was springtime when I received it, and so I tried the bullet on wheat squirrels the first thing. It surely busted the wheat squirrels—and ground hogs—open, and put them into Vermin Heaven in a hurry, but I seemed to have no luck in hitting them beyond 75 yards. A 10-shot group at 60 yards was not so hot, but I blamed myself, and kept on shooting at squirrels and missing the longer shots. So next I put up a 60-yard target at 100 yards—and could not start a group on it. Well, I surely got on edge then to find out just where this bullet did group. So I tacked a 3-foot square of paper against a log for a bullet stop, and then shot five unsized and five sized bullets at a spot in the center of the paper, resting the rifle. I got a bullet mark or two somewhere on the paper, a slug or two hit the ground, some hit the log, and the rest went over the log and hit in a neighbor's field (that is, maybe they hit the field, but I was never sure). Anyway, that bullet wasn't worth a hayseed for accuracy, though theoretically it should have been "just it." I only got some experience out of that, with a nearly-new bullet mould left for trading stock. But bullet-fit did not seem to have a d— thing to do with this bullet's target deficiencies. It's an evil bullet that will not shoot somewhere near accurately with some particular powder-charge combination; but this one would not.

That good friend of all riflemen, J. V. K. Wagar, once sent me some special over-size bullets for the .32-20 that he had had some good results with. It was necessary to use a .32-40 shell-mouth expander to open the mouths of the .32-20 shells to receive these bullets. With his recommended charge of powder these bullets shot only fairly for me, but with the Ideal powder measure set at 17 grains, and using sifted duPont Shotgun Smokeless powder behind these bullets, the bullet holes wadded in a bunch close to center at 60 yards. So this seemed to be only a matter of the proper

powder instead of bullet-fit. But this load seemed to have a lot of pressure for a lead bullet.

Now to explain bullet-fit. The gas of the exploding powder starts the bullet into the bore with the suddenness of a blow. The bullet starts into the rifling whether it is centered or not, and spins down the bore that same way; but when it leaves the muzzle it spins about its own center of gravity. If the center of gravity does not coincide with the axis of the bore, then when the bullet leaves the bore it rights itself, with more or less of a jerk, and most likely starts off at a tangent; thus we get a flyer or group-enlarger. This is what proper bullet-fit is for—to cause bullets to center the bore correctly when fired, and leave the muzzle spinning true.

Shooters are now getting better accuracy than ever before with factory cartridges. Both rifle bores and ammunition have been improved, we admit, but isn't there something beside bullet-fit that has done the trick? I suspect that "powder-fit" has had more to do with this accuracy increase than bullet-fit. The only real proof I have that a change of bullet-fit improved accuracy is in some of my old targets.

In the caliber that I have experimented with the most, I have shot bullets from .003" under bore size up to .004" over size, and with the right charge of powder one size seemed to shoot about as well as the other. The under-size bullets were too small to be securely crimped in the shell with an ordinary tool; the over-size bullets were hard to load and handle. It just seems to me that a properly fitting combination of powder and bullet is necessary in all cases, and can be found only by trial at the target. I have a 5-shot group at 50 yards rest, using a bullet that I can just about push through the sizing die with my fingers; yet—judging by the group—the bullet apparently centered the bore and came out true. Maybe the average shooter does not worry about the details of his ammunition if it gives results at the target; but somehow I have been curious to discover how to compound accurate loads without so many trials and errors.

Many are the bullets that I have fired that were under-size, bore-fit, and over-size, but I don't know yet what bullet-fit to try first in starting out with a new rifle. But it surely is an evil bullet that won't do good or better shooting if you fiddle around and get the proper powder-fit.

What do you say?

THE WRECKERS

(Continued from page 29)

"tition" presupposes some degree of near-equality. It would be no competition for either of us should the writer indulge in fisticuffs with Joe Louis. It is quite the same if he pits his puny skill shoulder-to-shoulder against the top shooters of our club. Who cares to participate, week after week, in matches in which he knows that he has no chance at a cup, and slight, if any, chance to share in the distribution of prize money? In the beginning, most of us were willing, even eager, to benefit by the experience and to avail ourselves of the counsel of the experts. But the experience, at a dollar a match, came high, and palled after a time, and the counsel was, strangely enough, not forthcoming, or, if it came, it was in the nature of the advice of the Marine at Camp Perry, who, coming off the line, was asked by a novice: "How much wind should a fellow take?" "Take all you want, buddy," said the leatherneck. "There's plenty of it." These men were, and are, of a type only too common in the shooting fraternity; they learned the game themselves, they say, and the rest of us should do likewise.

Some of us, a very few, are doing so, slowly and painfully. The rest simply put their guns away and resume fishing, or golf-playing, or gardening. Any attempt to classify us would be greeted with glad cries, and we would indeed welcome the opportunity to shoot it out in our own classifications, or even against the experts under suitable handicap conditions. But that, the experts say, would clutter up the range and interfere with matches in which they would care to participate. Well, they need fear no such interference now. Nor may they expect to split large pots of prize-money, as they did in the golden days of four to seven years ago. Incidentally, these same men were the controlling spirits of the club which failed as above mentioned, and their course of action in contributing to that failure is having its parallel in both method and personnel in our club. History is repeating itself, with slight variations.

The turkey-shoots which began and perhaps accelerated the decline will serve to illustrate another phase of the attitude of the experts. Customarily, our turkey-shoots ran in two courses. One was the running-deer, at a hundred meters, a quarter per shot, ten men to the relay. The other was a disappearing bear, a painted figure mounted on the target-carriers in the pit and exposed for a few seconds at two hundred yards, a quarter per shot, ten men to the relay. Fair enough, both methods, and if properly conducted, good sport even among men of unequal skill. For three, perhaps four, years turnouts were good, and as the public was always invited, many who were not club members participated, paid their quarters, shot their shots, and went home to buy turkeys in the markets. The half-dozen experts carried home the turkeys which had been trucked to the range, and they did it nearly every time. Only on very rare occasions did one of the "rest of us," or the outsiders, win a turkey, and then only by a combination of skill and luck; luck mostly. This is the way it was worked: At the disappearing-bear range, the half-dozen watched the lists as the relays were made up, and, when eight or nine of the "rest of us" had signed up and deposited our quarters in the kitty, one, and only one, of the half-dozen experts would put in his quarter. The other five refrained, to wait for later relays. Or to put it more baldly, they would not pit their skill each against the others. They played for practically a sure thing. Furthermore, being in control, they refused to limit the number of birds per man, with the result as aforesaid, that only phenomenal luck permitted a turkey to escape their winnings. The running deer should have been less subject to this "fixing," but unfortunately, because of mechanical limitations, it could be advanced at but one speed, and it was a simple matter for the experts to adjust sight-drift to the speed of the target-carrier and thus assure a center hit. Of course, others of us could have done the same thing, but by the time the method was disclosed there were none of the "rest of us" to compete. One unlucky victim of this fixing, used a sporting rifle with a fixed windage zero, once participated in eighteen relays in a single day, at twenty-five cents per shot, and was second high seventeen times. Discouraging? I appeal to anyone! Those eighteen turkeys went to six men; the half-dozen experts.

Officerships—the presidency, vice-presidency, and various executive posts—are year after year divided among the half-dozen. At first, this was almost by acclamation. These men had put much time and labor into the building of the range; they were experienced riflemen, and the club, it was felt, needed their wisdom and their knowledge. It appears now that it was hardly wisdom; it cannot be wise to wreck a fine beginning. After interest in the general affairs of the club had died from the causes mentioned, attendance at the meetings at which officers are elected lapsed to a mere handful, the half-dozen dominating. These meetings are

invariably held at times convenient only to the half-dozen, and without adequate notice to all members. Whether or not this is deliberate is a matter of conjecture. Consequently, the officerships rotate among the half-dozen. This year there are two new executive officers. One of them seldom appears upon the range, takes no part in general club activities, and was not even present at the meeting at which he was elected. The other, a comparative newcomer and a real enthusiast, is battering his head against the wall of the half-dozen's resistance to innovation, and the result is easily foreseen. The rest of us either permit our guns to gather dust in a cabinet, or hang a target upon a wire fence somewhere in the country and endeavor to acquire a degree of skill which will permit entrance into the charmed circle of the experts. We could so very easily be training ourselves upon our range, under the tutelage of those who know the game! A few of us still appear at the scheduled matches, but it is for practice-against-competition only. The competition being very near zero, and the practice under the conditions being quite expensive, the number of these few dwindles from match to match. Quite possibly it is only a matter of time, and present indications seem to point to the very near future, when there will be only the half-dozen present at the scheduled matches. Perhaps that situation will mark the attainment of a sought-for end. They will have the range and equipment for their exclusive and stodgy pleasure, without interference, but also without competition or prize-money. Perhaps they are not really so selfish. If not, then only realization on their part of their causative agency in bringing about the demoralization will save the club from the fate of its predecessor—dissolution of membership, disrepair of premises, and eventual abandonment.

PISTOL MACHINE REST

(Continued from page 17)

will hang there without any bolts through the blocks. If I ever have any trouble with the .45 automatic shifting in this clamp, I believe that I will bore the holes for the projections all the way through the clamp blocks, and fit long screws. The left clamp block was inletted enough to allow the slide lock and safety lock to work freely, and a hole was bored all the way through the block where the clip-release button is located; while the right side block is inletted sufficiently at the clip-release point to provide for the operation of the clip-release rod. The release is accomplished by inserting a small drift pin through the hole bored in the left clamp block, and pushing the clip-release button. Four $\frac{3}{8}$ x 5-inch bolts through the clamp blocks, and around the gun grip, draw the clamp up and hold the gun very tight.

The elevation adjustment is located near the top of the swinging arm (see picture), and the change in center of impact is so small in relation to the amount the adjusting screw is turned, that I find no difficulty in moving the center of impact up or down an inch or two at a time as needed when shooting. The center of impact at fifty yards is always well below the line of aim with this machine rest. No adjustment is provided for windage, and I see no need for any if the rest is properly located with reference to the target holder when the concrete base is poured.

There has been a lot of pleasure mixed in with the hard work I have done on this rest, and if any pistol shooter derives benefit as the result of my effort, I am well repaid. Furthermore, when in the future I step up to the firing line, I will have confidence in my gun and ammunition.

MORE ABOUT THE 86

(Continued from page 31)

shell loaded with 75 grains of black powder and a 260 grain hollow point bullet. Ideal mould No. 403169 casts standard weight bullets for the .40-65 and .40-82.

The differences between the .45-70 and .45-90 calibers are in the length of the shells and twist of rifling. The .45-70 shell is $2\frac{1}{10}$ inches long and the .45-90 shell is $2\frac{4}{10}$ inches long. The groove diameter of the 86 in both calibers measures between .456 and .458, with a 22 inch twist in .45-70 caliber and a 32 inch twist in .45-90 caliber. Forty-five seventy cartridges can be fired in a .45-90, but will not improve the chamber if often done.

The standard black powder charge for the .45-70 with any weight bullet—300, 330, 350, 405 and 500, is 70 grains of Ffg or Fg black powder.* In the .45-90 the powder charge varies from 90 grains of Fg with the standard 300 grain bullet and 85 grains with the 350 grain bullet, to 82



The Model 86 action in closed and open position, showing principle of operation

grains with the 405 grain bullet. These cartridges when factory loaded were known as the .45-90, .45-85 and .45-82.

The famous "Gould deer killer" 330 grain hollow point bullet (Ideal No. 456122) may be used in the .45-70 and .45-90. This bullet, cast one to sixteen, should be seated as far out in the case as possible and still have the action close properly. Lyman states that 70 grains of Fg black powder in the .45-70 develops an estimated velocity of 1380 ft.; while in the .45-90, ninety grains of Fg black powder develops an estimated velocity of 1554 ft. Twenty grains of Sharpshooter in the .45-70, and 22 grains in the .45-90, will approximate black powder velocities.

Since these calibers were extensively used for years, a number of hi-velocity and low speed loads were developed for them. The hi-velocity loads are safe in the 86 Win-

* NOTE: The other standard factory load was 55 grains weight of Ffg black powder behind the 405-grain lead bullet, which was the Springfield carbine load for the U. S. Cavalry. This same cartridge was also loaded with King's Semi-Smokeless powder, and with low-pressure smokeless, to give the same ballistics. Also there was the metal-cased bullet of the same weight driven by a charge of smokeless powder—Ed.

chester and Winchester Single Shot rifles, but may wreck other weapons such as the Springfield Single Shot.

The duPont Company, in their booklet "Better Loads for Better Shooters," list two new .45-70 hi-velocity loads with the 300 grain soft point factory bullet and No. 3031 powder. Four new loads are given for the .45-90 using 300 and 405 grain factory soft point bullets with Nos. 3031 and 4198 powders. In the .45-90 these loads require a higher front sight, develop considerable recoil, and shoot four inches or better at 100 yards. One of these loads, fifty-three grains of 4198 powder and the .45-70-405 soft point factory bullet (overall length of cartridge 2.84 inches) develops, in the .45-90, 1980 ft. velocity and 3,523 ft. pounds muzzle energy. The 405 grain soft point bullet at this velocity, when fired into a block of wood at 50 yards, mushrooms perfectly.

The discontinued .50-100-450 is a .50-110 case loaded with 100 grains of Fg black powder or its smokeless equivalent and a 450 grain bullet. Lyman lists three Ideal moulds for the .50 Winchester—a 362 and 450 grain solid, and a 390 grain hollow point. Pacific will make a standard .50-110-300 bullet mould for \$3.50.

King's Semi-Smokeless powder is still available for reloading. The recommended charges are: .38-56-255, 26 grs. Fg; .38-70-255, 56 grs. Fg; .40-65-260, 50 grs. Cg; .40-82-260, 66 grs. Cg; .45-70-405 and 500, 55 grs. Fg; .45-90-300, 74 grs. Cg. These charges develop velocities approximating those developed by standard black powder charges and should not be exceeded.

The Lyman Gun Sight Corporation supply their No. 3 Ideal tool for all 86 cartridges except .38-70, and moulds for all standard size bullets except .50-110. The other reloading tool companies will make tools for these calibers. Good used tools and moulds can usually be purchased for a few dollars from dealers in used shooting equipment.

AT LAST!

(Continued from page 32)

of the short, light, 40-grain bullet. We have adopted as our standard load 15 grains of No. 4227, Remington No. 6½ primer, and Remington or Winchester 45-grain Hornet bullet. This load is almost unbelievably accurate at all ranges, and we could ask for nothing better.

The short barrels cause no noticeable increase in recoil, report, or muzzle blast. There is some loss in velocity, but the general handiness of the rifles is greatly improved.

Neither of these rifles has changed its zero since we settled upon a load. Months of shooting under all sorts of weather conditions has shown a constant zero, scope settings being left absolutely undisturbed. The Lovell is apparently the least sensitive of all the small hi-velocity cartridges, and is therefore easy to load for super-accuracy. The economy is high, Jimmy and I reloading a box of fifty cartridges for 75 cents. Cases are good for about ten reloadings, a split neck finally terminating their usefulness.

Years ago Frank Hoffman, of the Hoffman Arms Company, told me he was going to make a cartridge that would outshoot any Hornet on earth, and he showed me a Winchester .25-20 single-shot case as he spoke. He never got around to this job, but Hervey Lovell did, and the result is the finest small cartridge of its type on earth today. Three men in my city now have Winchester Model 70 Hornet-Lovell rifles, and the story of one is the story of all. Undoubtedly the Lovell is here to stay. May its tribe increase!

OVER THE NEWS DESK

NEW GALLERY QUALIFICATION COURSE

A new Qualification Course for N. R. A. members has just been adopted by the Association in order that riflemen in the gallery postal matches of the past season may use their scores for N. R. A. Qualification. The new course consists of 10 shots in each position—prone, kneeling, sitting and standing. The minimum scores required are 375 for Expert, 350 for Sharpshooter, and 325 for Marksman badges.

If you wish you may also use any similar score fired in a shoulder-to-shoulder league match or tournament. Just send a bulletin or statement from match official showing the score made to the Headquarters office in Washington, together with entry fee of \$1.00, and the proper badge will be mailed immediately.

ANY TAKERS?

Three "out-of-the-ordinary" challenges:

The Cambridge University Rifle Club of Cambridge, England, has requested an international match between their six-man team and that of some American university team over the Dewar Course. They would like to fire this match during the early part of May. Inquiries to date among our collegiate teams have not brought forth a team accustomed to anything but the regular gallery conditions. N. R. A. headquarters would be glad to convey the acceptance of these match conditions on the part of any of our Universities to the Society of Miniature Rifle Clubs of Great Britain, to be passed on to the Cambridge officials.

J. Fred Engert, Herkimer, New York, issues a challenge to any resident of New York state for an all-around firearms match, to consist of standard courses of fire with pistol, rifle and shotgun. Mr. Engert will be glad to communicate further details to any individual interested in his unusual challenge.

And by way of the high seas:

PLEASE PLACE FOLLOWING CHALLENGE IN THE AMERICAN RIFLEMAN QUOTE SOUTH SEAS RIFLE AND PISTOL CLUB OF GUAM MI WISHES POSTAL MATCHES WITH ANY TEAM STOP INDOOR FIFTY FOOT COURSE, THREE OR FOUR POSITIONS FIVE OR TEN MAN TEAM, ANY METALLIC SIGHTS, DESIGNATED NUMBER OF SCORES TO COUNT. ADDRESS ALL COMMUNICATIONS TO MARINE BARACKS GUAM MI VIA AMATEUR RADIO STATION W6WJ SECOND SIGNAL CO MARINE CORPS BASE SAN DIEGO CALIF. UNQUOTE. M W CRAIG, SECRETARY SOUTH SEAS RIFLE AND PISTOL CLUB, GUAM MI.

POSTAL MATCH RESULTS

MATCH No. 9

D. A. Thimmesch, Ft. Dodge, Iowa 389
Frances Z. Johnson, Waupaca, Wisconsin 389
R. C. Wild, Cedar Falls, Iowa 387

MATCH No. 10

D. A. Thimmesch, Ft. Dodge, Iowa 397
Frances Z. Johnson, Waupaca, Wisconsin 395
Leo E. Allstott, Mason City, Iowa 393

MATCH No. 11

Hugh A. Kelly, Etna, Pennsylvania bulls 102
Dr. P. H. Makielski, Mishawaka, Indiana " 89
Irving B. Merry, N. Edgecomb, Maine. " 80
Roy A. Reck, Bradford, Pennsylvania. " 69
Milton Peterson, Jr., Omaha, Nebraska still firing

MATCH No. 12

Jean Yocum, George Washington 496
Vivian Bono, University of Maryland 495
Doris Ludwig, George Washington 493
Laura Duncan, University of Maryland 488

MATCH No. 13 "A"

Hugh Kelly, Etna, Pennsylvania bulls 58
O. Rollag, Prince Rupert, British Columbia still firing
James Dalzell, Wyandotte, Michigan 499
F. P. Madison, Canon City, Colorado 499
William F. Lyons, Coshocton, Ohio 499

MATCH No. 13 "B"

Ed. G. Pyle, Jr., Los Angeles, California 494
Andre Holzner, Chicago, Illinois 494
C. F. Sterbutzel, Connelville, Pennsylvania 493
Arthur F. Schutts, Adrian, Michigan 493

MATCH No. 13 "C"

George R. Smith, Los Angeles, California 494
Horace Newbury, Holly, Michigan 487
Charles L. Boyinton, Quanah, Texas 486
Charles Molnar, Los Angeles, California 482

INTERNATIONAL BROADCAST

Another milestone in the history of American small bore shooting will be passed April 3rd, when, through the combined facilities of the Columbia Broadcasting System and the British Broadcasting Corporation, the first broadcast of an International Rifle Match will take place. The American team will fire their score on the Chicago range. The British will fire in London. Columbia's announcer and the British commentator will exchange a running commentary during the progress of the match from their respective ranges. The time: April 3rd, from 4:40 until 5 P. M., E.S.T.

Of prime importance as an indication of the high place shooting has again achieved in the world of sport, the match was arranged for by the National Rifle Association as another service to the riflemen of the nation.

CHARLIE HOPKINS AUTO CRASH VICTIM

Capt. "Charlie" Hopkins, well-known in shooting circles as the genial sales promotion manager of the Winchester and Western arms and ammunition companies, suffered painful injuries in an auto crash which occurred recently near Alton, Illinois. Captain Hopkins' car was completely wrecked and he received a badly shattered leg and face cuts. Now in St. Joseph's Hospital at Alton, Captain Hopkins will probably be several months recovering the use of his leg.

NEW PISTOL LEAGUE

The Fredericksburg (Va.) pistol and revolver league now being formed will be open to teams from the District of Columbia, southern Maryland and Virginia. The schedule calls for eight matches to be fired every other Sunday beginning the first Sunday in May. The entries will be limited to fifteen teams, which it is hoped will include the districts mentioned above. Camp Perry course of fire, center fire, fired at 2:30 in the afternoon. Entrance fee is one dollar per man, with an added fifteen cent range fee per match. Mail entries to Dr. R. N. Lanier, Fredericksburg, Va.

TIMED FIRE with Bill Shadel

These lines covering the first few days of our annual southward pilgrimage of big time tournaments are being pounded out amidst the comfortable surroundings of the Tampa Terrace Hotel in good old Tampa.

The first day's effort toward that inevitable sun tan only adds emphasis to the warmth of our first day in Florida, and contrasts the snow and cold we met in even the south's metropolis of Atlanta. We started out a day early in order to take in the "smoker" promised by the boys of the Richmond (Va.) pistol league, and no mistake, that was a great start. These pistol lads making up 14 teams in the league wanted us to say that theirs is the largest league of any city, and while we didn't honestly know, yet we do believe that if they aren't the largest, their enthusiasm and spirit will darn soon make them that.

We understand the real start of the league was in 1935 when the Richmond Rifle and Pistol Club through J. Herman Atkins, Jr., and "Doc" Cornell, Lt. Thos. J. B. Lohr in charge of Ammunition Depot, Adjutant General's office, and W. B. Willis of the Penitentiary guard force, got together. Four teams were soon joined by two more, the State Farm and U. S. Reformatory guards at Petersburg. Last year the newly formed Old Dominion Rifle and Pistol Club invited them to use their new eleven point range, with fourteen teams completing the league. Lt. Lohr deserves a lot of credit for getting those boys shooting the handguns, and as for us, the informal "Doc" Cornell sure threw a real party and here's saying thanks, "Doc."

We couldn't pass up WBT in Charlotte, N. C., en route, because those boys have been too good to the shooting game. Found Jim Beloungy just recovering from a hospital sojourn, or we would have induced him to go along with us, as we did the more easily seduced Crutchfield, program director. "Crutch" met us in Atlanta at the close of those fine first year matches there and immediately arranged a "bull" session over Atlanta's WSB, the loquacious O. B. Keeler making up the third part of a trio which extended a scheduled ten-minute appearance into a twenty-five minute sketch, "ad lib" on angles of the rifle and pistol game you've never imagined.

A word about those Atlanta matches. They seem a "natural" for the boys en route to Florida's outdoor shooting. Their attendance represented fourteen states, the largest registered meet held in Georgia.

The Chattahoochee Club deserves one of those honorable mentions we used to pass out in a column under that name, and more than that for their boost to the game in them thar' parts. Headed by George Sweeney, Carl Jackson and club president Neidler, they seem to have gone a long ways toward reviving the shooting South, at least in their own bailiwick. The publicity they get down there is sweet music, and before we turn this typewriter over to O. B. Keeler, who has promised to carry on for us, just as he has since this tour continued on from Atlanta, we want to say that, in our book, "Pop" has done more for publicizing this game through the hundreds of friends he has among national sports writers than any one individual. Take it away, O. B.

O. B. Keeler Speaking

Well, Bill—Here we are again! Or are we? Of all the expeditions this correspondent ever has expedited, or hampered, this one is the most bewilderingly and fascinatingly eccentric.

We got away from Atlanta, as Mr. Shadel has suggested, bright and early, or at least early, on Monday morning, March 6, and drove to Tampa (Continued on page 38)

TIMED FIRE

(Continued from page 37)

that day, along with Richard (the Lion-Hearted) Rogers, demon statistician, and Charlie Crutchfield, the silver-voiced baritone who presides as program director of Station WBT at Charlotte, N. C.

I dragged off the riflemen and pistolers for a morning at Belleair, long enough to see Patty Berg, national woman golf champion, and Dorothy Kirby, the Atlanta girl, in action, and to meet Judge Kenesaw Mountain Landis. And then we had a look at the great American Legion small bore range at St. Pete, where the National Midwinter meet was about to start, and then we headed for that dear Miami and Coral Gables and the second annual Flamingo Open Pistol Tournament—but not until we had got at least a small part of a night's rest, so-called.

After exigencies, including a busted rear spring, a visit to Jimmy Foxx and the Boston Red Sox at the Sarasota ball park, and a collapsed rear tire due to picking up a bit of bamboo at considerable speed—Mr. Shadel has a way of flying too low at times—we checked in at the Palmetto Pistol Club range, about which Messrs. Shadel, Wyman, Mark Wheeler, The Detroit Police Team and a hundred others are still raving. With good reason, too—that plan or design by Mr. Clem Theed, president of the Palmetto Pistol Club, and his little helpers, with a bank of thirty targets on a line, mounted on a track, and receding by motorpower to 25 or 50 yards, and then coming up like a line of soldiers to the firing-point for inspection and marking, is the greatest stride in the development of pistol shooting as a gallery spectacle that this observer has ever dreamed of.

However, we lived in the town; that is to say in Miami, and our jumping about now took on a general resemblance to the activities of waterbugs, though we were operating over a flat Florida terrain. We bounced, as a young reporter once aptly phrased it, from pillow to post; from hotel to pistol range and from pistol range to *The News* and Station WIOD, where my dear old friend Jack Bell functions at least a dozen hours a day and writes his masterpieces and puts on his sports news broadcast; and *The Herald* which covered the tournament with admirable comprehensiveness. And so to bed—maybe.

Anyway, we were up at 5 o'clock, an hour at which only milkmen and persons going to be hanged are supposed to be moving, and started back northward along the Tamiami Trail, to where we had left Richard (the Lion-Hearted Statistician) at the Esther Bush Hotel in St. Pete, not far from the fine range, where the Sunshine Rifle Club had everything going under the direction of the great Fred Moulton as range officer and Colonel White as executive officer, in the National Midwinter Small Bore affair.

Here again we lived at a distance from the range, in Tampa, pending the opening of the pistol program, so we did a lot more bouncing, along the lovely driveway and the Gandy Bridge—one of Florida's and America's most charming stretches. And living at the Tampa Terrace, with the Palm Room in full blast, and a 16-piece orchestra—and Frank Winchell—ah, wilderness were Paradise enow! I would think up another word for wilderness, but the big pistol matches are about to start, and when the shooting begins I no longer am grasped by an impulse to get under a bed, but rather to go out to the firing-line, and stand humbly behind these latter-day artists of rifle and handgun, and marvel at their artistry.

Thirty years of sports reporting haven't turned up anything like this last week for this waning correspondent—and there's still another week of it here. But we will be approximately in one spot, for a vast change.

—so they tell us:

YOUNGEST . . .

SIRS:

James Robert Blakeslee was 13 years old the 6th day of November, 1938. He weighs about 85 pounds, is 5 feet, one-half inch tall. As for a nickname he has none. I usually call him Jim.

At Buffalo he used a heavy barrel 52 with 15X Lyman Super Targetspot. The gun, sling and scope weigh 14 pounds, 13 ounces, so you can see he had his hands full.

I am enclosing a picture of him taken since we came home from Buffalo. Lewis Run, Pennsylvania. G. D. BLAKESLEE.

• Reason for the interest in "Junior" Blakeslee is his performance at the Buffalo small bore matches the last of January, when he outdistanced many an old timer in several of the events. The youngster, shooting only since October, 1938, failed to make one possible when buck fever cost him his last shot and vowed he would go clean next time, which he did, turning in a 400 x 400—24X total in the Scope Sight match! Rifleman Blakeslee, Sr., may well be proud of Rifleman Blakeslee, Jr.—ED.

. . . AND TALLEST

SIRS:

Am enclosing a picture of a four-man pistol team at the Police Pistol matches, El Paso police range. Left to right they are myself, Lieut. Edward Streeter, Jacob Ehrlich and Ernie Balinger.

"Jake" Ehrlich is a resident of El Paso, Texas; is 8 feet, 2½ inches tall, winters in El Paso and travels with Barnum and Bailey's during the show season. Jake is an enthusiastic pistol shooter and a good shot. It is necessary for him to have a special grip, much longer than used by the usual shooter. He is doubtless the world's biggest shooter in pistol competition. A good sportsman and genial companion, Jake has

James Robert Blakeslee



Jake Ehrlich (3rd from l.)

travelled all over the world, and is exceptionally well informed concerning world events.

Thought you might be interested in seeing how the world's biggest shooter looked. El Paso, Texas. CAPT. GUY H. GRANT.

AND STILL THEY COME

SIRS:

Being one of the "very small minority, making a lot of noise" that is agitating for position shooting, I'd like to speak my piece.

Undoubtedly, most of us like to do what we do well. Most of us can shoot well prone. No, of course, we're not all medal winners, but nearly all who shoot at targets can get between 380 and 390 over the Dewar Course. To the man who follows the registered matches 380 is a terrible score, but just the same it's 95% of a possible! That close to perfect sounds pretty good to most of us. If we're that good, it's worth while fighting for the other 5%.

On the other hand, the average shot does well to shoot 80% perfect in the standing position. That's discouraging at the start. Besides, practice as much as he can, he finds it very difficult to get above that 80%. Few of the reputedly better shots manage more than 90%. So human nature asserts itself and we don't like standing; ditto kneeling; ditto sitting. Therefore we shoot prone.

Two years ago at the Camp Grant (Illinois) matches, a single 50 meter offhand match was held. There were few entries, most of them being local boys. It was won by a shooter who lived within ten miles of the range. None of the big names from all over the country who attended the matches entered that I can remember. The 1937 Camp Grant matches were the only registered matches I have ever had the opportunity of attending. However, last year I was introduced to the Davenport Shooting Association, one of the oldest and probably one of the last Schuetzen clubs in the country. I attended five of their matches, on five different Sundays. If the N. R. A. will forgive this observation, I liked the Davenport style of shooting so much that I shall never attend another N. R. A. registered match if I can go to Davenport instead, or to any other place that offers position shooting.

Beyond any doubt I am a cantankerous cuss. Dixon, Illinois. RAYMOND WAGNER.

SIRS:

Prone shooting, phooey!! For myself, I think the N. R. A. and the small bore game have degenerated into old age pension clubs. Takoma, Washington. SGT. FRANK R. GATES.

• We still believe that the position shooter's arguments are the voice of the minority, "making a lot of noise." Proof: many letters championing the introduction of position matches into the outdoor schedule, not one letter from any one of the 100,000 or so dyed-in-the-wool small bore shooters that make up the outdoor tournament element of shooting America. Let the prone shooters speak up, lest their silence bespeak an apathy toward their sport.

Tournament Reviews

GOODRICH OPEN PISTOL

Two hundred and fifty-two entries were listed in the 5th Annual Goodrich Open Pistol Tournament, sponsored by the Summit County Pistol League, Inc., which reached a resounding and successful climax late Sunday evening with the Pennsylvania Railroad Police Golden Arrow Team winning the F. B. Work Trophy with the .38 caliber guns. This same Railroad Police team won the Walter B. Wanamaker trophy earlier in the day with .22 caliber guns.

C. E. Schetter of Akron took the Goodrich Rifle & Pistol Club Trophy in the .22 caliber slow fire match with a score of 179 x 200. The .22 caliber timed fire match was won by W. F. Woods of Akron with 194 x 200. Woods again demonstrated his ability with the hand gun by winning the R. J. Berno Trophy with a score of 279 x 300 in the .22 caliber three-stage gallery course match. The Summit County Pistol League Trophy in the .22 caliber aggregate match went to C. E. Schetter with a score of 639 x 700.

Going into heavier caliber guns, some new names were added to the list of the winners. Joseph C. Root of Cleveland, Ohio, captured the Akron, Ohio Police Trophy in the .38 caliber slow fire match with 178 x 200. Gold, silver, and bronze medals were won by H. T. Englert of Oil City, Pa., L. L. Field, New Brighton, Pa., and C. F. Benson, Cuyahoga Falls, Ohio, in the .38 caliber timed fire match. This Benson chap, only 17 years old, is going to make some of the older shooters step along to keep at the top of the list in future matches. We find H. T. Englert's name at the top of the list again in the .38 caliber three-stage course with 263 x 300 to win the Lentsch Jewellers Trophy and in the center fire aggregate match he took the Summit County Pistol League Trophy.

A feature of this tournament was the presentation of a .22 caliber Colt Automatic Woodsman target pistol to Mr. J. C. Kelsey, Sec.-Treas. of the Summit County Pistol League, in appreciation of his untiring work in behalf of the League.—D. S. BENSON.

NON-REGISTERED EVENTS

CONNECTICUT—State Gallery Rifle Championships. Establishing a world's record for attendance at an indoor gallery match, the eleventh annual State Championship Gallery Rifle Team Match of the Connecticut State Rifle and Revolver Association, Inc., was held on the Winchester range, New Haven, on March 3, 4 and 5. Entries totaled 1182.

Other marks fell by the wayside during the three-day tournament, for when the smoke had cleared away the Quinnipiac Rifle Club of New Haven, which has won the state trophy eight of the eleven times the match has been fired, had been supplanted by the Enfield Rifle Club of Thompsonville, Connecticut, as state champions. And just to rub it in a little, the Middlefield Rifle Club was in second place and the Wepawaug Rifle Club of Milford annexed third place, thus accounting for all of the medals offered Connecticut teams. Quinnipiac wound up entirely out of the money, finishing in twelfth place.

Out-of-state teams continued their custom of winning the over-all high money, the Papco Rifle Club of Paterson, New Jersey, taking the out-of-state medals and the first prize money and the Richmond Hill Rifle Club of St. Albans, New York, taking second prize money, while Enfield, the state champion, took third money. Scores of the first ten teams in the senior division: Papco, 939; Richmond Hill, 936; Enfield, 933; Middlefield, 928; Wepawaug, 926; Schaghticoke R. C. of Schaghticoke, New York, 923; Capitol City Rifle Club of Hartford, 922; Silver City Gun Club of Meriden, 918; Brooklyn Edison Club No. 3, 917; Middle Haddam Rifle Club of East Hampton, Connecticut, 915. The Middlefield girls retained their state women's team championship with a snappy 885, and also took the over-all prize for women's teams.

The junior teams present to many the most interesting phase of this annual match, the entry growing from none only a few years ago to 100 teams this year. St. Xavier High School of Brooklyn, New York, presented the most impressive appearance as a bus load of 40 uniformed youngsters arrived at the range early Sunday afternoon and prepared for the match. And when St. Xavier left, Sergeant Thomas Van Deusen's charges carried with them the out-of-state medals as the teams finished first and second, as well as many of the Lyman Merit medals, so popular with the younger shooters. Staples High School of Westport were the junior state team champions, with the Manchester American Legion in second place. The juniors fired off-hand and prone only, as contrasted to the four position match arranged for the seniors, although there were several junior teams entering in both divisions.

Connecticut has a splendid reputation for the way their annual tournament has been run, and 1939 was no exception, with the Connecticut State Association putting the shoot over in the way this fine organization would be expected to. Everything went off like clockwork—and being able to smoothly run off the world's largest gallery meet in two short days without a hitch is a whale of a testimonial to the ability of any organization.—W. A. TEAGUE.

CALIFORNIA—Sacramento Offhand Matches. There was a little wind, a little rain, and it was a little cold for California in February, but there was a lot of enthusiasm present. The matches were held on the Filtration Range, 200 yards, Decimal target. Three divisions, Service rifle, Free rifle and Any rifle, with 30 shot courses for each, made up the day's schedule.

In the Service Division, Ray Murphy, who had set a new range record of 255 the week before, dropped to 244, but still managed to carry off first ranking in that class. The Free Rifle enthusiasts were paced by George McCormick, who took top rating with a score of 251. The high medal for Any rifle went to B. G. Simms, with a new range record for the class, 261. All three of the winners are members of the Capital City Rifle Club.—RAY MURPHY.

VIRGINIA—Richmond Pistol League. We've heard of "Photo-Finishes" in racing; and tie scores in the last half of the ninth with the bases full; and a fighter being saved by the bell, who came out in the next round and won; but the last match of the annual series in the Richmond Pistol and Revolver League was actually more thrilling than any of these thriller-themes.

The two top teams went into the match only nine points apart: State Police, 15093; and Penitentiary Guards No. 1, 15084. Both were determined to come out the winner of first place and to take home the cup donated to the League in memory of Richmond Police who died in service. But they ended in the same order anyway, nine points apart, with the State Police the winners. Both teams shot a tie of 1382 of a possible 1500.—And the range janitor is still sweeping up alibis.

Another close race was between the two high individual shooters for top place. Dr. M. J. Connell, Jr., of the Richmond Rifle and Pistol Club No. 1 team led Carlyle Johnstone of the State Police team by 5/5ths of a point at the start of the night—Connell 286 4/11, and Johnstone 286.2. There was no doubt at the end of it however, because Connell shot a 296 for a new league record, while Johnstone shot 290. Result: Connell; 287.166, and Johnstone; 286.545, Connell ending just a little more than a full half point above Johnstone for the season.—BARNEY GRAY.

INDIANA—The Chief Kokomo Memorial Match, named by its sponsors, the Kokomo Y. M. C. A., in honor of Indiana's famed Ko-Ko-Mo-Ko, chief of the Miamis, was fired January 22, with seven indoor 50-foot rifle matches scheduled. Star performer of the meet

was Frank Russel, who took home five of the eighteen medals awarded, including that for the aggregate.

WISCONSIN—Viroqua Small Bore Tournament. Adverse weather seems not to affect Wisconsin shooters, 35 of whom showed up February 12th for the Viroqua shoot in spite of icy highways and generally bad traveling conditions.

The Viroqua Kiwanis Trophy went to W. E. Edwards of Richland Center, Wisconsin, whose 380 x 400 was high for tyro competitors. To W. A. Rolers of Tonah, Wisconsin, went the Moen Trophy, awarded to high non-tyro. Myrtle Aber of Richland Center took the Tyro Women's award with a 190 x 200 prone total.—M. N. DAFFINRUD.

INDIANA—Old Trails Rifle and Pistol Club Matches. Fifty shooters showed up at Richmond for the half-dozen matches of the Old Trails indoor shoot of January 29th. To P. Chagares, a local shooter, went the initial 3-position event, with a total of 287 for the 30 shots. An offhand match went to Al Kees, another Richmond shooter, and the prone iron sights event fell to Robert Swhier of Portland. The final match, a Women's Prone event, was taken by K. Himburg of Cincinnati with a 196.

OHIO—The 14th Annual Mid-West Small Bore Rifle Tournament opened at Fort Hayes, Columbus, Ohio, with a bang on Saturday, February 25th and closed with a series of 300 bangs right in the 10-ring, as Stanley Grooms of Grove City, Ohio, set what is claimed to be a new iron-sight record. In 1937, V. J. Tiefenbrunn scored 300 plus 1499 in the Tewes Trophy Match, which is a 30-shot iron-sight prone event. At the close of this year's Tewes Trophy Match, Grooms had fired a total of 300 plus 2700, or 300 straight 10's.

The Mid-West Championship, an aggregate of the Columbus Trophy Match, 3-position any-sights, and the Tewes Match was taken by E. L. Shaw of Columbus Grove, Ohio, with a score of 587, the identical score of last year. The Mid-West Metallic Sights Championship was won by L. A. Wilkens, Cleveland, and the Columbus Trophy Match, 3-position any-sights, went to Fred H. Holman, Dayton, with 290.

In the American Legion 3-Position Match, D. R. Maxwell, of Columbus, Ohio, won with a score of 277.

As the Champion first place medal winner of the match, we present Helen Jenkins, 18 year old Columbus girl, now a freshman at Denison University, Granville, Ohio. Miss Jenkins took the Women's Match with 278, and won the Junior Championship, the Junior 3-Position Match and the Junior Prone Match!

The Individual Railway Employees' Match and the N & W Ry. Trophy were taken by Wm. E. Kelly, Akron, with a score of 575 with D. R. Maxwell, Columbus, second with 555. The Secretaries Match, a new event this year, was won by John B. Brown, Akron, with E. L. Shaw, second, and L. A. Arntz, Mansfield, third.

A new registration and squadding system was tried out for the first time and at no time was there any waiting at the squadding desk. According to all comments heard, this new system will be a great boon if adopted generally.

If a smooth-running match and a new long-run record is any criterion, the 14th Annual Mid-West Small Bore Rifle Tournament was a distinct success!

ILLINOIS—The Tenth Annual Boat and Sports Show, held at the Navy Pier, Chicago, opened Sunday, February 27th and closed Sunday, March 5th with every bit of the space taken by exhibitors. In spite of the very unfavorable weather for the opening day the half-mile long building was actually crowded with spectators.

The rifle and pistol program in connection with the show was sponsored, as usual, by the Chicago Daily News and conducted for them by the Illinois State Rifle Association. There were 14 rifle and 8 pistol matches exclusive of the several aggregate matches for each. The big attraction on the opening day for the many spec-

RECORD INDOOR SHOOT



MEET SENIOR TEAM CHAMPIONSHIP

1st

Papco Rifle Club, Paterson, N. J.—939 x 1000. Nick Kroeze 193, C. Vander Bush Sr. 191, C. Grollmund 188, D. Smith 186, C. Vander Bush Jr. 181.



STATE SENIOR TEAM CHAMPIONSHIP

1st

Enfield Rifle Club, Thompsonville, Conn.—933 x 1000. E. Landry 189, E. Avery 189, R. Carrigan 188, S. Testoni 184, A. Blunden 183.



MEET INDIVIDUAL AND STATE INDIVIDUAL CHAMPIONSHIP

1st

Capt. Ashley J. Griffin, Meriden, 196 x 200.

Connecticut Gallery Matches, V Nearly All Won With Mod 52

BREAKING all records with a total of 1182 competitors—71 above last year's record-smashing entry—the 11th Annual Connecticut Gallery Rifle Championship Matches were likewise distinguished for brilliant competition right through the program, and for the overwhelming success of shooters using Winchester Model 52 Rifles and Winchester Leader Ammunition.

Outstanding in the great tournament—shot on the Winchester Ranges, March 3, 4 and 5—was the shooting of winner of the Meet Individual and State Individual Championships, Captain Ashley J. Griffin, of Meriden. His superb 196 x 200 over-topped by 4 points the excellent mark set last year by Carl G. Johnson, of Stamford, in winning both championships. Captain Griffin shot a Winchester Model 52 Rifle with standard barrel and Winchester Leader Ammunition—Johnson, last year, a Model 52 and Stayless EZXS.

With a total of 153 teams firing, five on a team, the senior team match brought out without a doubt by far the keenest shoulder-to-shoulder 4-position team competition of the season for the entire country. The High-Over-All winners, the Papco (Paterson Auto Parts Co.) Rifle Club team, of Paterson, N. J., with the grand score of 939 x 1000, had a clean lead of 3 points. Again, too, the winning score was ahead of that made last year by the High-Over-All team—exactly 10 points higher. The Papco shooters, fresh from almost a walk-over championship win at Newark—15 points up on the second team—showed how well they were grooved, by dropping just a single point below their Newark score. As at Newark, all shot Model 52 and Leaders.

CONNECTICUT GALLERY RIFLE CHAMPIONSHIPS

50 Feet. Four positions, 20 shots by each shooter
INDIVIDUAL MEET AND STATE CHAMPIONSHIPS

First in both, Capt. Ashley J. Griffin, Meriden, Conn., 196 x 200. M52 and Leaders. Second for

Meet, Nick Kroeze, Paterson, N. J., 193 x 200. M52 and Leaders. Second for State, J. Frenzel, Stamford, Conn., 192 x 200. M52 and Winchester Stayless EZXS.

INDIVIDUAL WOMEN'S MEET CHAMPIONSHIP
First, Clara Gropp, Brooklyn, N. Y., 189 x 200. M52.

INDIVIDUAL WOMEN CHAMPIONSHIP
First, Marion Middlefield, N. J., 182 x 200. M52 and Leaders. Second, S. Testoni 184, A. Blunden 183.

SENIOR MEN'S TEAM CHAMPIONS

First for Meet, the Club, N. J., 939 x 1000. Second for State, the Club, N. J., 933 x 1000. Third for Leaders, 933 x 1000. Fourth for Leaders, 933 x 1000. Fifth for Leaders, 933 x 1000. Sixth for Leaders, 933 x 1000. Seventh for Leaders, 933 x 1000. Eighth for Leaders, 933 x 1000. Ninth for Leaders, 933 x 1000. Tenth for Leaders, 933 x 1000.

MEET AND STATE CHAMPIONS

First in both, the Girls' Team, Middlefield, Conn., 190. All Leaders. Third in both, the Girls' Team, New Haven, 852 x 1000 and 182 x 200.

JUNIOR CHAMPIONSHIPS

50 Feet. Four positions, 20 shots by each shooter
INDIVIDUAL CHAMPIONSHIPS
First, Norman James Villag, 188 x 200. M52. Second, Nascimbene, York City, 188 x 200.

MEET TEAM CHAMPIONSHIP

First, Xavier Team, N. York, N. Y., 875 x 200. Second, all used Leaders.
STATE TEAM CHAMPIONSHIP
First, Staples Team, Westport, and Leaders.

Great credit is due to this tournament, conducted by the sponsors, the State Rifle Association, President, Lent, of Middlefield, and workers.



R. D. TRIGGS



T. SAMSOE



W. P. SCHWEITZER



DAVE CARLSON



WM. BREULER



JACK LACEY



HOWYER C.

DOES WINCHESTER

TRADE MARK



MEET AND STATE WOMEN'S TEAM CHAMPIONSHIPS

1st

Middlefield Girls' Team No. 1, Middlefield, Conn., — 885 x 1000. Marion Treat 184, Ruth Woike 179, Florence Kellish 178, Dorothea Schaub 176, Lynette Brown 168.



MEET JUNIOR TEAM CHAMPIONSHIP

1st

Xavier High School Team No. 1, New York City—879 x 1000. L. Nascombene 188, F. Cole 178, H. Uhrig 177, R. McGinnis 169, E. Toomey 167.

ates, With 1182 Competitors, Model 52 and Leader Staynless

DUAL WOMEN'S CHAMPIONSHIP
Marion Treat, Middlefield, 184 x 200. Ruth Woike, New Haven, 179 x 200. M52 and EZXS.

SENIOR WOMEN'S TEAM CHAMPIONS

for Meet, Middlefield Club, Paterson, N. J., 939 x 1000. All M52 and EZXS. for State, Middlefield Club, Thompson, N. J., 933 x 1000. All Leaders. Competitions. Annual tournaments. For this year, the Enfield is year women State honors.

MEET AND WOMEN'S TEAM CHAMPIONS

in both, Middlefield Girls' Team No. 1, Middlefield, Conn., 885 x 1000. All M52 and EZXS. Third in Middlefield Girls' Team, Middlefield, 852 x 1000. All Leaders.

JUNIOR CHAMPIONS

Feet. Promoted each shooter

INDIVIDUAL CHAMPIONSHIP

Norman Nascombene, New York City, 188 x 200. M52. Nascombene, New York City, 188 x 200.

MEET TOWNSHIP

Xavier High School Team No. 1, New York City, 879 x 1000. Shot Model 52 and EZXS.

STATE TOWNSHIP

Staples, Westport, All M52 and EZXS.

at credit from this mammoth tournament, comes a hitch, is due to the fact that the State Rifle and Pistol Association President Russell of Middlefield is a worker.

MODEL 52 AND EZXS WIN IN METROPOLITAN MATCHES

In this year's series of 18th Annual Indoor Matches of the Metropolitan Rifle League, in New York City, in February, national leaders who shot Winchester Model 52 Target Rifles and Winchester EZXS Ammunition won a generous share of the high honors in these always gilt-edge competitions. All matches at 100 yards, the Preliminary Individual 125 shots, the Championship 100, Team Matches 20 shots per man.

Amplifying his 1938 record as America's leader in big-time competition, Ransford D. Triggs, of Madison, N. J., swept the Preliminary and the Championship with two grand exhibitions. In the former he led the runner-up by 11Xs with the wonderful score of 1249 x 1250—100Xs. In the Championship, pressing Triggs to the last eyelash, E. J. Doyle, of New Haven, was runner-up. Triggs' rifle was a Winchester Model 52 with heavy barrel and Marksman stock. Doyle shot a Model 52 like Triggs' and EZXS.

PRELIMINARY MATCH. 88 ENTRIES

1. R. D. Triggs 1249 x 1250—100X M52
4. D. Carlson 1247 x 1250—96X M52 EZXS
5. C. O'Hare 1247 x 1250—87X M52 EZXS

TWO-MAN TEAM MATCH. 49 TEAMS

1. T. Samsone & W. P. Schweitzer 400 x 400—30X One M52 Both EZXS
2. W. C. Kennedy & R. D. Triggs 400 x 400—29X Both M52 One EZXS
3. E. Doyle & Wm. Breuler 399 x 400—27X Both M52 Both EZXS
4. Jack Lacey & E. Morgan 399 x 400—25X Both M52 Both EZXS

FOUR-MAN TEAM MATCH. 17 TEAMS

1. Madison Rifle & Rev. Club. 797 x 800—59X All M52 Two EZXS
2. Quinnipiac Rifle Club 797 x 800—59X All M52 All EZXS

Next four teams also all shot Model 52.

INDOOR CHAMPIONSHIP. 148 ENTRIES

1. R. D. Triggs 500 x 500—40X M52
2. E. J. Doyle 500 x 500—39X M52 EZXS
3. A. M. Newhard 500 x 500—36X M52
5. R. D. Lambert 500 x 500—33X M52 EZXS

WIN WITH WINCHESTER AT NEWARK

Tuning up for the year's biggest of big-time indoor shoots, the Connecticut State at New Haven in March, the Papco Rifle Team, of Paterson, N. J., took a grand fall out of seventeen other full five-man teams in the Indoor Winter Tourney, at Newark, N. J., of the Amateur Rod & Gun Club. They turned in a team score for four positions, 75 feet, of 940 x 1000—fifteen points up on the runner-up team. All five Papco shooters shot Model 52 and Winchester Leaders.

INDOOR WINTER TOURNEY TEAM MATCH

1. Papco Rifle Team 940 x 1000 All used Model 52 and Leader.
2. Richmond Hill Rifle Club, Richmond Hill, N. Y. 925 x 1000 All used Model 52.

INDOOR WINTER TOURNEY INDIVIDUAL MATCH

1. Chas. Grollimund 192 x 200 M52 Leader
3. W. P. Irving 189 x 200 *M75
4. Dave Smith 188 x 200 M52 Leader
5. Sidney Chasman 188 x 200 M52

*The new Winchester Model 75 target rifle.



STATE WOMEN'S INDIVIDUAL CHAMPIONSHIP

1st

Marion Treat, Middlefield, 184 x 200.



EDDIE DOYLE

WINCHESTER REPEATING ARMS CO.

(Division of Western Cartridge Co.)

Dept. 2-C, New Haven, Conn., U. S. A.

YES, send me FREE the Winchester folders on Model 52 and Model 75 Small Bore Target Rifles, together with the Winchester Ammunition Book, containing 44 pages of up-to-date information for shooters, including particulars on Winchester Precision EZXS, Staynless EZXS and Leader Staynless small bore cartridges.

Name

Address



C. GROLLIMUND



NICK KROEZE

tators and the riflemen was a 15-man team shoulder-to-shoulder match between Illinois, captained by Lew Mason, and our neighbor and friendly rival, Wisconsin, led by Colonel J. J. Ring. The match consisted of three positions, prone, sitting, and standing, ten shots each, any sights. The final score of the ten high men of each team was Illinois 2840, Wisconsin 2832. The first ten men on the Illinois team also fired the kneeling position which was added to the prone and standing position and the score used in a postal match with Ohio and Connecticut. The results were:

| | |
|-------------|------|
| Connecticut | 2835 |
| Ohio | 2833 |
| Illinois | 2779 |

In the individual matches the competition was keen and a good score fired early in the day was often pushed out of the medal list before the day was over, to the despair of the competitor. In match 10, four position metallic-sights, the final high three scores were 194, 193, and 190—a perfectly good 189 was not enough. In match 11, which was a similar event but with any-sights, the first five scores were 193, 192, 192, 191, and 190. In match 12, prone-sitting, there was a three cornered tie of 199 for first place which had to be broken by additional shooting. Just to make things tough a prone any-sight match shot on the 50-foot target at 75-feet was scheduled, and to really try your nerves, an any sight re-entry match fired at 75-feet on the 25-foot target was set up. It required a score of 196 to take first place.

In the pistol shooting program realism was injected into the shooting by using a life size anatomical target which was of special interest to police in testing their ability to stop a criminal when gunfire is necessary. In match 24, .45 caliber slow and rapid at 25 yards on the Army "L" target, the high four individual scores were 196, 194, 191, and 189. In all of the matches there was a large entry list and the competition for first honors was very keen.—BYRON E. PUTMAN.

CALIFORNIA—The third Annual State Gallery Championships were held at the California National Guard Armory, San Francisco, on March 3rd, 4th and 5th, 1939. All records were broken this year as far as attendance is concerned as well as record scores. In the gallery matches, 87 5-man teams and 20 individuals entered. The teams were divided in different classes. There were 41 teams in the civilian class, won by the Oakland Rifle Club with a score of 950 for the 4-position course. Twelve teams entered the National Guard division, which was won by Co. "F", 159th Inf. C. N. G. In the High School division, there were eleven teams and the Tamalpais School of San Rafael lead with a score of 893.

There were eight teams entered in the College Division, which was paced by the University of California with a score of 912. In the Junior division, 20 shots prone, 4 teams were entered. The Tamalpais No. 2 team took the event with a score of 964. The Veterans division was won by Post 429 American Legion with a score of 929.

The matches on the main armory floor were very popular and on Saturday, March 4th, the 50-yard offhand match on the International target was won by J. Giblin of Post 429 with a score of 87. A 50-meter match for any sights was won by G. Anderson of the Schuetzen Verien with a score of 200. There were seven possibles in this match and the winners were decided by a shoot off.

Third Event was the 50-yard Expert Target which was won by F. Emery of Grass Valley with a score of 199.

On Sunday the 50-yard offhand match was taken by M. E. Berryman of Grass Valley with a score of 86. The 50-meter any-sight match went to M. E. Berryman and again six men shot possibles.

The 50-yard Expert Target any-sight division was won by C. Inman of Mare Island with a score of 198 and in the Iron Sight division, Earl Harris of Santa Cruz was first with a score of 196.—HUGHES RICHARDSON.

Coming Events

LOOKING AHEAD

Missouri. The more we learn of the plans for this year's big Kansas City indoor pistol meet ("Heart of America Pistol Tournament"), the more interesting it becomes. For instance, there'll be an electrically equipped "target" so that spectators and competitors alike may keep posted on "where the bullets are going", plus an up-to-the-minute score board system to keep the crowd informed on the shot-by-shot progress of the matches. Then too, the range has been glassed in to prevent interference from, or to, the balance of the great show that will run currently with the pistol events.

California. The first of a summer schedule of four registered pistol tournaments to be staged at San Francisco, on the nearby Fort Funston range, has been set for Sunday, April 16th. This is another of the events sponsored by the

but perhaps you can sneak away at the last minute for the final days of the meet, which is scheduled for Glendale, March 31st and April 1st-2nd. Even if you can only watch, the American half of the London vs. California International Postal Match should make the trip interesting enough. It's to be fired early Sunday morning.

Ohio. The Fort Harmar Rifle Club of Marietta is trying a new stunt this year in scheduling an outdoor shoot in the North 'way ahead of the usual outdoor season—April 29th and 30th. The tournament, which is N.R.A. registered, should be a welcome break after the long winter indoor season. And our bet is that, despite the early dates, all of the small bore clan in that neck-of-the-woods will be rarin' to go.

Texas. The Lone Star State is all wound up for a bang-up shooting season, with five registered tournaments already set to go. Leading off will be the South Texas Small Bore Championships at San Antonio, April 2nd. Staged by the old standby, the Liberty Rifle Club, there will be a program of four matches over the standard small bore courses. Next on the calendar is the Texas State Small Bore shoot at Fort Worth, April 22nd and 23rd. We haven't a program yet, but it should be a real shoot. The Texas State Association is sponsoring the meet. Then on to Houston, where the Bayou Rifles are putting on their second annual small bore shoot, May 7th. Their program lists 6 events, which should be plenty of shooting for one day. And on May 20th and 21st the North Texas tournament at Wichita Falls. This includes both rifle and pistol divisions, the pistol registered for the first time this year. To wind up, there will be the Texas State Pistol shoot at Dallas, but not until June, so we'll tell you more about that later on. Sure sounds as if the Texans are going to have to hustle to keep up with all that shooting!

Alabama. We've just received the registration of the Fourth Annual Alabama State Rifle Association's small bore tournament, to be held May 6th and 7th at Birmingham. Better write for a program and get in on this first registered shoot in that area.

ALABAMA

*May 6-7: Fourth Annual Alabama State Rifle Association Small Bore Tournament to be held on the Persons Rifle Range in Birmingham, Alabama. For programs write J. P. Prince, 1852 Princeton Avenue, Birmingham, Alabama.

ARIZONA

*June 3-4: Annual Small Bore Rifle Tournament to be held in Prescott, Arizona. Sponsored by the Yavapai Rifle and Pistol Club. For programs write Harry L. Jacks, Box 546, Prescott, Arizona.

CALIFORNIA

April 2: Oakland Police Pistol Tournament to be held in Oakland, California.

*April 16: San Francisco Traffic Police Club Registered Tournament to be held at Fort Funston, California. Sponsored by the San Francisco Traffic Police Club. For programs write Emil J. Dutil, 324 16th Avenue, San Francisco, Calif.

April 16: Annual "C" Match (Small Bore Rifle) to be held in Antioch, California.

May 7: Richmond Rifle and Revolver Club Pistol Tournament to be held in Richmond, California. Sponsored by the Richmond Rifle and Revolver Club. For programs write Ernest J. Martin, 325 12th Street, Richmond, California.

May 14: Grimsley Small Bore Rifle Tournament on Roberts Island, California.

May 21: San Francisco Traffic Police Pistol Tournament to be held at Fort Funston, California. Sponsored by the San Francisco Traffic Police Pistol Club.

May 21: Southern California Small Bore League Tournament in Glendale, Calif. Sponsored by the Southern California Small Bore League. For programs write E. C. Hamley, Jr., 821 West Doran Street, Glendale, California.

FUTURE COMING EVENT NOTICES

In order to conserve space in an already crowded portion of THE RIFLEMAN a definite policy has recently been adopted regarding publication of notices in the "Coming Events" column. In brief this policy is as follows:

Affiliated State Association Tournaments, Regional Tournaments and all Registered Tournaments will be published three months in advance of tournament date provided word reaches the Washington office in time to do so. Smaller tournaments of local interest will be published if space in the magazine permits, but not otherwise. Notices from clubs not affiliated with the N. R. A. will not be published.

When sending copy for the "Coming Events" column remember it must reach the N. R. A. office not later than the 5th of the month preceding date of issue.

San Francisco Traffic Police, and we'd suggest you try to include it on your shooting calendar. And, of course, there's the Golden Gate Exposition and Treasure Island to think about. Early Exposition visitors should lay their plans to have nothing else to do on that particular Sunday, and so chalk up another registered meet to their credit.

New Yorkers should keep in mind the annual Niagara Frontier indoor pistol matches at Buffalo. This year the dates are April 15th and 16th. If you haven't one already, Wallace Beattie, 829 Ashland Avenue, Buffalo, will be glad to mail you a program.

New York again, this time the small bore shoot at Poughkeepsie, scheduled for May 13th and 14th. We haven't all of the details yet, but it's an old, established shoot, though registered this year for the first time. Programs may be had from Charles Hoyt Smith, P. O. Box 1009, Poughkeepsie, New York.

North Carolina. The North Carolina State Rifle Association, Kannapolis Rifle Club and the Gastonia Rifle Club are joining hands this year to put over the best shoot ever held in the state. They've decided on May 5th and 6th for these N. C. Small Bore Championship matches, which should be plenty of notice for all of the small bore crowd along the Atlantic Coast to attend.

Ohio. The combined rifle and pistol events of the North Central Ohio shoot at Ashland are registered again this year and the Ashland R. & P. C. expect their gallery matches to go over with a bang. They are to be fired April 22nd and 23rd. Thirteen rifle and pistol matches make up the program.

California State Small Bore. The shoot will have started by the time this issue reaches you,

June 4: Alameda Police Pistol Tournament to be held in Oakland, California. Sponsored by the Alameda Police Pistol Club. For programs write Captain J. M. Stroh, 2247 Central Avenue, Alameda, California.

June 10-11: Annual Western States Small Bore Tournament to be held in Richmond, California. Sponsored by the Richmond Rifle and Revolver Club and Richmond Elks Rifle Club. For programs write E. J. Martin, 325 12th Street, Richmond, California.

June 16-17-18: California State .30 Caliber Championship to be held at San Luis Obispo, California. Sponsored by the California Rifle and Pistol Association. For programs write L. A. Pope, 532 Oakford Drive, Los Angeles, California.

June 18: San Francisco Traffic Police Pistol Tournament at Fort Funston, California. Sponsored by the San Francisco Traffic Police Pistol Club.

June 24-25: 3rd Annual All Night Outdoor Small Bore Rifle Matches at Sacramento, California. Sponsored by the Capital City Rifle and Revolver Club. For programs write Ray Murphy, 2753 Riverside Blvd., Sacramento, California.

June 24-25: All Night Small Bore Rifle Tournament to be held at Sacramento, California.

July 9: Northern California Small Bore Tournament at Richmond, California. Sponsored by the Richmond Rifle and Revolver Club and Richmond Elks Rifle Club. For programs write E. J. Martin, 325 12th Street, Richmond, California.

July 9: Oakland Police Pistol Tournament at Oakland, California. Sponsored by the Oakland Police Club.

July 15: All Night Small Bore Tournament at Glendale, California.

July 17: San Francisco Traffic Police Pistol Tournament at Fort Funston, California. Sponsored by the San Francisco Traffic Police Pistol Club.

July 21-22-23: Southwest International Pistol Tournament at San Diego, California. Sponsored by the San Diego Police Revolver Club. For programs write Rodney Pease, Police Headquarters, San Diego, California.

July 29-30: California State Pistol Tournament at Oakland, California. Sponsored by the California Rifle and Pistol Association. For programs write L. A. Pope, 532 Oakford Drive, Los Angeles, California.

CONNECTICUT

April 2: Fifth Foot Rifle Match sponsored by the Connecticut State Rifle and Revolver Association, Inc. For programs write J. Russell Lent, Middlefield, Connecticut.

DELAWARE

***July 22-23:** Delaware Tidewaters Small Bore Championship at Wilmington, Delaware. Sponsored by the Marksman's Club. For programs write F. C. Wince, P. O. Box 302, Wilmington, Delaware.

ILLINOIS

April 7-8: Morgan Park Military Academy Inter-scholastic Tournament to be held in Chicago, Illinois. Sponsored by the Morgan Park Military Academy. For programs write Major Dennis C. Pillsbury, Morgan Park Military Academy, Chicago, Illinois.

April 15-16: 1st Annual 50-Foot Indoor Rifle Tournament at Chicago, Illinois. Sponsored by The Commonwealth Edison Rifle and Revolver Club. For programs write J. A. Morrison, Room 624 Edison Building, Chicago, Illinois.

April 17: 2nd Annual Pistol Championship to be held in East St. Louis, Illinois. Sponsored by the East St. Louis Rifle and Pistol Club. For programs write D. H. Sharp, 617 N. 83rd St., East St. Louis, Illinois.

April 23: 2nd Annual Indoor Rifle Championship to be held in East St. Louis, Illinois. Sponsored by the East St. Louis Rifle and Pistol Club. For programs write D. H. Sharp, 617 N. 83rd Street, East St. Louis, Illinois.

May 21: Pistol Match sponsored by the Chicago Revolver Club. For programs write Otto Widemark, 3106 Fullerton Avenue, Chicago, Illinois.

June 4: Pistol Match sponsored by the Hyde Park "V" Rifle and Pistol Club. For programs write Dr. Robert E. Englert, 1305 East 63rd Street, Chicago, Illinois.

June 25: Pistol Match sponsored by the Arrowhead Rod & Gun Club. For programs write Frank Gerlich, 386 Blackhawk Road, Riverside, Illinois.

July 4: Pistol Match sponsored by the Chicago Revolver Club. For programs write Otto Widemark, 3106 Fullerton Avenue, Chicago, Illinois.

INDIANA

May 28: 3rd Annual Southeastern Indiana Small Bore Rifle and Pistol Matches to be held in Batesville, Indiana. For programs write Chester Heinlein, 23 Beech Avenue, Batesville, Indiana.

May 20-21: 4th Annual Midwest Pistol & Rifle Tournament at Lafayette, Indiana. Sponsored by the Lafayette American Legion Post No. 11. For programs write John F. Holmes, 506 Russell Street, West Lafayette, Indiana.

IOWA

April 16: The State Association Gallery Rifle Tournament to be held in Waterloo, Iowa. Sponsored by the Becker-Chapman Rifle Club. For programs write R. W. Travis, 314 Insurance Bldg., Waterloo, Iowa.

May 21: Restricted Small Bore Rifle Tournament to be held in Des Moines, Iowa. Sponsored by the Iowa State Rifle Association. For programs write G. G. Cooper, 816 Telephone Bldg., Des Moines, Iowa.

June 17-18: Iowa State Small Bore Rifle Tournament to be held in Des Moines, Iowa. Sponsored by the Iowa State Rifle Association. For programs write G. G. Cooper, 816 Telephone Bldg., Des Moines, Iowa.

KANSAS

April 22-23: The Kansas State Smallbore Gallery Championship to be held in Ellis, Kansas. Sponsored by the Ellis Rifle Club. For programs write Dr. G. A. Surface, Ellis, Kansas.

KENTUCKY

April 22-23: First Annual 50 Yard and 50 Meter Indoor Tournament to be held in Ashland, Kentucky. Sponsored by the Daniel Boone Small Bore Rifle League. For programs write Bob Kates, 2224 Hilton Avenue, Ashland, Kentucky.

MARYLAND

***July 1 to 4:** Eastern Small Bore Rifle and Pistol Matches at Camp Ritchie, Maryland. Sponsored by the Eastern Small Bore Rifle Association. For programs write Tom Davis, 60 Warren Street, New York City.

MASSACHUSETTS

April 19: Annual Patriots Day Shoot to be held on the Concord Rifle Range, Concord, Massachusetts. Sponsored by the Middlesex Rifle Club, Inc. For programs write D. J. Hardesty, 12 De Mars Street, Maynard, Massachusetts.

May 21: .22 Caliber Small Bore Matches at Ludlow, Mass. Sponsored by the Ludlow Fish and Game Club, Inc. For programs write Harold V. Lovett, 290 Goodwin St., Indian Orchard, Mass.

July 29 to August 6: United Services of New England Tournament at Wakefield, Massachusetts. Sponsored by the United Service of New England. For programs write E. F. Walker, 49 Westminster St., Providence, Rhode Island.

MINNESOTA

April 15-16: State Championship Small Bore Tournament to be held in Minneapolis, Minnesota. Sponsored by the Minnesota Rifle and Revolver Assn. For programs write C. B. Melrose, 4515 17th Avenue, South, Minneapolis, Minnesota.

MISSOURI

***April 24 to 28 inc.:** Heart of America Pistol Tournament to be held in Kansas City, Missouri. Sponsored by the Kansas City Police Benefit Association. For programs write Sergeant D. E. Bates, Police Headquarters, Kansas City, Missouri.

MONTANA

June 16-17-18: Northwestern Rifle Association 14th Annual .30 Caliber, Small Bore and Pistol Competition, "The Little Camp Perry of the West," to be held in Missoula, Montana. Programs available May 1st. Write T. A. Krall, Box 91, Milltown, Montana.

NEW JERSEY

April 20-21-22: The 1st Annual Union Junior College Interscholastic Rifle Match to be held at the

Abraham Clark High School in Roselle, New Jersey. For programs write Rodney Peeke, Secretary, Union Junior College Rifle Club, Roselle, New Jersey.

May 7: 6th Annual Amateur Rod and Gun Club 50 Meter Matches at Plainfield, New Jersey. For programs write R. B. Champlin, 18 Belle Terre Road, West Orange, New Jersey.

***May 27-28:** Sea Girt Small Bore Championships at Sea Girt, New Jersey. Sponsored by the Association of New Jersey Rifle and Pistol Clubs. For programs write Charles Walter, 497 Cornell Street, Perth Amboy, N. J.

NEW YORK

***April 15-16:** 4th Annual Niagara Frontier Indoor Pistol and Revolver Matches to be held in Buffalo, New York. Sponsored by the Buffalo Revolver and Rifle Club. For programs write Wallace A. Beattie, 829 Ashland Avenue, Buffalo, New York.

April 23: Annual Spring Shoot at Roslyn, New York. Sponsored by the Roslyn Rifle and Revolver Club. For programs write Peter John, Jr., 534 Concord Avenue, East Williston, New York.

***May 13-14:** Annual Spring Small Bore Tournament to be held in Poughkeepsie, New York. Sponsored by the Poughkeepsie Rifle Club, Inc. For programs write Charles Hoyt Smith, P. O. Box 1009, Poughkeepsie, New York.

May 27-28: 2nd Annual Outdoor Pistol Tournament in Albany, New York. Sponsored by the New York Central Athletic Assn. Rifle Club. For programs write O. E. Whitbeck, 122 Morris Avenue, Albany, New York.

***June 10-11:** Long Island Rifle and Pistol Association Spring Tournament at Woodbury, Long Island. Sponsored by the Long Island Rifle and Pistol Association. For programs write C. Moore, 79 Verbera Avenue, Floral Park, Long Island, New York.

NORTH CAROLINA

***May 5-6:** North Carolina Small Bore Championship at Gastonia, North Carolina. For programs write S. K. Barringer, P. O. Box 935, Kannapolis, North Carolina.

NORTH DAKOTA

April 2: 3rd Annual Small Bore Indoor Rifle Tournament to be held in the Grand Forks City Auditorium. Sponsored by the Forks Rifle Club. For programs write W. G. Coulter, Box 1048, Grand Forks, North Dakota.

OHIO

April 15-16: Ohio State Rifle Team Matches to be held at Fort Hayes, Columbus, Ohio. Sponsored by the Ohio State Rifle and Pistol Association. For programs write Miles E. Goll, 119 Forest Avenue, Dayton, Ohio.

***April 22-23:** North Central Ohio Rifle and Pistol Matches at Ashland, Ohio. Sponsored by the Ashland Rifle and Pistol Club. For programs write Stuart M. Martin, Ashland, Ohio.

***April 29-30:** Open Small Bore Rifle Tournament at Marietta, Ohio. Sponsored by the Fort Harmar Rifle Club. For programs write L. R. Miller, 735 4th Street, Marietta, Ohio.

May 21: 4th Annual Metropolitan Open Pistol Championship at Cincinnati, Ohio. Sponsored by the Indiana Hill Rangers. For programs write Captain H. E. Wilson, R. F. D. No. 1, Cincinnati, Ohio.

May 27-28: Muzzle-Loader Rifle Matches at Marietta, Ohio. Sponsored by the Fort Harmar Rifle Club, Inc. For programs write L. R. Miller, 735 4th Street, Marietta, Ohio.

OKLAHOMA

June 10-11: Magic Empire Small Bore Rifle Tournament at Tulsa, Oklahoma. Sponsored by the Tulsa Rifle Club and Veterans of Foreign Wars Rifle Club. For programs write W. J. Powers, Jr., 835 S. Gary Place, Tulsa, Oklahoma.

OREGON

***May 27-28:** Medford Small Bore Tournament at Medford, Oregon. Sponsored by the Medford Rifle Club. For programs write S. M. Tuttle, Box 1166, Medford, Oregon.

***June 10-11:** Oregon Small Bore Tournament at Portland, Oregon. Sponsored by the Oregon State Rifle and Pistol Assn. For programs write Leslie T. St. Clair, Gresham, Oregon.

PENNSYLVANIA

May 12: Small Bore Rifle Shoot open to All Corners at Washington, Penna. Sponsored by the Firestone Rifle and Pistol Club. For programs write Walter Fowler, Box 158, Washington, Penna.

May 14: 3rd Annual Lehigh Valley Spring Small Bore Championships at Allentown, Penna. Sponsored by the Bear Rock Rifle Teams. For programs write W. F. Gutekunst, 220 N. 9th Street, Allentown, Pennsylvania.

May 27: 3rd Annual Small Bore Tournament at Ellwood City, Pennsylvania. Sponsored by the Ellwood City Rifle Club. For programs write D. M. Stamm, R. D. No. 2, Ellwood City, Pennsylvania.

May 30: 4th Annual Memorial Day Rifle Tournament at Harmony, Pennsylvania. Sponsored by the Zelienople Rifle Club. For programs write Martin W. Newhausen, 337 E. New Castle St., Zelienople, Pennsylvania.

TEXAS

***April 2:** South Texas Small Bore Tournament at San Antonio, Texas. Sponsored by the Liberty Pistol and Rifle Club. For programs write Homer M. Matthews, 826 Craig Place, San Antonio, Texas.

***April 22-23:** Texas State Small Bore Tournament at Fort Worth, Texas. Sponsored by the Texas State Rifle Association. For programs write John F. Callan, 403 E. 30th St., Austin, Texas.

***May 7:** Bayou Rifles Second Annual Small Bore Tournament at Houston, Texas. Sponsored by Bayou Rifles, Inc. For programs write Marie B. Robertson, 301 S. 80th Street, Houston, Texas.

May 18 to 21: Texas State Big Bore Rifle Matches at Laredo, Texas. Sponsored by the Texas State Rifle Association. For programs write John F. Callan, 403 E. 30th Street, Austin, Texas.

***May 20-21:** 7th North Texas Rifle and Pistol Tournament at Wichita Falls, Texas. Sponsored by the Wichita Falls Gun Club. For programs write H. E. Barr, P. O. Box 1191, Wichita Falls, Texas.

***June 9-11:** Texas State Pistol Tournament at Dallas. Sponsored by the Texas State Rifle Association. For programs write John F. Callan, 403 E. 30th St., Austin, Texas.

VERMONT

April 15-16: Vermont State Gallery Championships at Northfield, Vermont. Sponsored by the Vermont State Rifle and Pistol Assn. For programs write Louis C. Taft, 41 Fortney Place, Barre, Vermont.

VIRGINIA

April 1-2: The State of Virginia Gallery Matches conducted by the Old Dominion Rifle Club of Richmond, Virginia. Sponsored by the Virginia Rifle and Revolver Association. For programs write A. L. Kidwell, 5405 Ditchley Road, Richmond, Virginia.

* Indicates Registered Tournament.

GUNS VS. BANDITS

Young Paul Burichka, son of a Philadelphia delicatessen proprietor, shot and killed one bandit and probably wounded another when the armed pair attempted to hold up the store of his father. The next day in court, Burichka was cleared of a homicide charge on which he had been arrested. Spectators at the formality hearing burst into applause when Magistrate Roberts told the 21 year old boy:

"It is customary to hold such cases for the coroner. But there is no question of your right to shoot, even to kill, in protecting your life and property. I am letting the underworld know that the law is not on its side. It's on your side and you're discharged."

The "weaker sex" can well be proud of Mrs. Marvin C. Green, wife of a Federal narcotic agent stationed in Atlanta. Mrs. Green, with only her three young children in the house, routed a negro intruder with two shots from a .32 caliber pistol she keeps handy when her husband is out of town. After the experience, she disclosed that "handling weapons runs in my family."

Bennie Brott, attempting to hold up the store of Emmanuel Wolfson, grocer of Omaha, Nebraska, was shot and seriously wounded when his victim, instead of submitting quietly, opened fire on the bandit and dropped him. Said Grocer Wolfson, "It made me mad that he had the nerve to rob my customers." Wolfson's quick thinking resulted in five shots crashing into the hold-up man's body, fired by the grocer in defiance of a shot from Brott's revolver.

Obituaries

E. E. COOKE

Ed Cooke was one of the unsung heroes of American shooting history. He keenly enjoyed competition on the firing line and no man thrilled more to the winning of a medal or trophy. He possessed the mental and physical requirements of a great shot. Had he seriously devoted himself to the business of shooting he would in all likelihood have found his name and picture known wherever riflemen or pistolmen gathered. But Ed Cooke's love of the Game transcended all else—and the Game needs workers more than it needs stars. So he abandoned the plaudits of spectators for the complaints of competitors. He gave up the small worries and short hours of the shooter for the headaches and endless labor of the statistical and range officer. He passed over the opportunity to make and maintain friendships by being a good fellow on the firing point for the unpleasant risk of losing friends by being an impartial official behind the firing line. He took his shooting in small, inconsequential portions whenever and wherever the coincidence of an hour's spare time and a local match permitted, but he took his work for the game in gargantuan doses seemingly without regard to time, place or the physical limitations of the human body. A victim of high blood pressure, it may have been that his death at the age of 50 years was in a measure martyrdom to the game for which he labored so ceaselessly.

When the Connecticut State Rifle and Revolver Association was reorganized in 1927 E. E. Cooke was elected Secretary. Other good men gave of their time and energy to build the State Association into its present position of prominence, but the demands of business, health and other interests caused them to work a while and then request relief. Only Ed Cooke was able to carry on and on—accepting new burdens, undertaking new plans—so that to him more than to any other one man the Connecticut State Rifle and Revolver Association stands as a living memorial.

In recognition of his working knowledge of the problems connected with league and state association activities he was elected a member of the Executive Committee of the National Rifle Association in 1938 and was re-elected to the Committee at the meeting of the national Board of Directors on February 3, 1939.

He died of a heart condition at his home in Meriden, Connecticut, on February 14th, after a brief illness, and was buried in Sacred Heart Cemetery at Meriden.

The memory of his quiet friendship, the example of his accomplishment and the inspiration of his unselfish, untiring devotion to the game will serve as an enduring beacon to guide and encourage all of us to carry on with the work to which he contributed so much.

C. B. L.

CAPTAIN ELMER C. CROOM

Elmer Croom loved guns as some men love hunting dogs, collections of stamps, fine pipes or old books. They were his hobby and his favorite companions. He summed up his philosophy and that of any gun bug when he once said:

"Some unkind folks have accused me of being a gun crank, but they certainly are wrong. A gun bug is a varmint that bites people and causes them to become imbued with a true love for a rifled barrel, an accurate cartridge, and the ability to hit where they aim. If there is something wrong with a man whose blood flows red in his veins, who inherits from pioneer ancestors a love

for accuracy, for dwelling in God's great outdoors, whose life is peaceful around a campfire, who prefers the strenuous arts of rifle shooting as compared to pink tea parties and pool halls, I am glad there is something wrong with me."

Captain Croom, only 35 at the time of his death, had been for 16 years an officer of the National Guard, and for the last six years served as Secretary of the Oklahoma Rifle Association. Through his efforts, the Okmulgee National Guard range was one of the most complete and best improved in the entire Southwest. National Guard and amateur State rifle and pistol matches have been held there for the past several years, mainly because of Captain Croom's personal interest in both organizations and his efforts in building a range large enough to accommodate so many shooters.

Ironically, his hobby was responsible for his death. A .41 caliber pocket pistol, accidentally dropped from his pocket, struck the cement floor of the Okmulgee National Guard Armory and sent a bullet into his body.—Okmulgee Times Democrat.

JAMES W. SMITH

Taps sounded on February 18, at Bloomdale, Ohio, for James W. Smith, 83, veteran Ohio Guardsman, Spanish war soldier and expert military rifleman.

For eight years—1900-1908—he was a member of the Ohio State Rifle Team and was with that group on its first trip to the so-called National Matches at Seagirt, New Jersey, in 1901. This was the first team from west of the Alleghenies to attend the eastern matches.

Lieutenant Smith constructed a rifle range on his farm near Bloomdale, maintaining it for several years for the benefit of the local National Guard company, a service which developed the Bloomdale Rifles as the first shooting organization in the Ohio Guard. It was here that such names as Winder, Richard, Simon, Wayne, Ross, Fry, and Smith himself, laid the ground work for more or less national prominence in the military rifle shooting fraternity.—W. H. RICHARD.

FRED M. WEST

Lt.-Col. Fred M. West, police captain of the Portland, Oregon, Police Department, died early in 1939 at a San Francisco hospital, following an illness of but two weeks. Colonel West had been a director of the National Rifle Association for the past three years, his term to have expired in February of this year.

CHALLENGES

The Montreal Small Bore Rifle Association wishes postal matches with any club in the country, teams of five to twenty, as desired. Arrangements may be made with A. W. Seaman, Sec'y, 208 Oliver Avenue, Westmont, P. Q., Canada.

STOLEN GUNS

Winchester Model 70 Super Grade .300 H. & H. Magnum, No. 18195. Stolen from car in Northern Wyoming, January, 1939. Reward. Maj. Charles W. Fake, Douglas, Wyoming.

Colt .45 ACP, serial C-159351. Reward. Stolen from N. C. Pierce, 216 McKinley Avenue, Norwich, Connecticut.

Colt National Match .45 ACP, serial C-183-312. Stolen from Lt. George M. Greene, Post-graduate School, U. S. Naval Academy, Annapolis, Maryland.

.38 Smith and Wesson M. & P. revolver, No. 114867. With it was a brown leather quick-draw holster. Stolen about February 18th from the car of G. T. Agnew, 230 Tremont Street, Boston, Massachusetts.

Hi-Standard Model-C (.22 Short), 6½-inch barrel, solder wrapped, plastic wood grip. Stolen from car near junction of U. S. routes 6 and 33, near Ligonier, Indiana, February 27th. Notify William D. Grube, 42 E. Winter St., Delaware, Ohio.

DOPE BAG . . .

Conducted by F. C. NESS

"Elementary Optics". To correct an omission and to give credit where due (eminently in this case) we hasten to apologize to Dr. Gardner and to publicly thank him in one breath. Beginning on page 29 of the February AMERICAN RIFLEMAN we published "This Telescope Business" by C. Wray Hageman, and we have since learned that the major portion of that article had been lifted bodily (almost word for word) from a book, "Elementary Optics" which Dr. Gardner wrote more than fifteen years ago, under the direction of the Chief of Ordnance.

We applaud Dr. I. C. Gardner for this fine job, "a handbook of applied optics and optical instruments suitable for use as a textbook in the Army training schools, and for the information of the officers and men who use optical fire-control apparatus". It is a small cloth-bound book of 130 pages, fully illustrated with diagrams and sketches. It is not an exhaustive treatise, but rather an unusually instructive handbook, concise and clear. It was published May 1921 (revised January 1924) by the Government Printing Office. At that time the author was Chief of the Optical Inspection Section of the United States Bureau of Standards. Dr. Gardner still is a staff member of that Government bureau.

Current American Sighting Scopes is the subject of our article this month (page 10). In it we include only contemporary American scopes of all types except cheap models. Since it is a uniform report on individual samples in our possession, we could not include the makers' dope and had to omit the 15X Sniper's Scope made by R. E. Davis of the Davis Engineering Company of Grand Island, Nebraska. Last month, in the Dope Bag, we gave a brief report on the Davis 6X Sniper's Scope, a special model which we had examined.

In this month's article we give our own dope, laboriously obtained, rather than quote the manufacturers' figures, which latter are readily available to all readers at the cost of a postage stamp to each advertiser. For the purpose of showing our readers these samples through our eyes, we briefly listed the mechanical features, the physical dimensions and proportions and the optical characteristics of each model tested. As explained in the article, the dope is our own and may not agree with that printed in catalogs and advertisements, but at least it was uniformly obtained and should be fairly comparative.

In order to be fair to those instruments which are factory-adjusted for about 100 yards, we used a range of 100 yards for checking resolution, definition, field, parallax and reticule coverage. Eye relief, position latitude, exit-pupil diameter and light transmission or loss was checked under powerful but controlled illumination indoors using light reflected, at short range, from an extended surface. To measure the exit pupil we use a millimeter scale on frosted glass at various experimental distances from the eye lens in order to obtain the sharpest and brightest circle of light.

This method also gives us the eye-relief distance. However, we are more concerned with the practical eye-relief, because we believe our members buy sighting scopes for practical use. This practical eye distance we obtain by slowly moving the instrument from the eye until it reached that maximum distance which will give the full field of view. It happens that this measurement usually agrees with that incidentally obtained with the frosted glass while checking the diameter of the exit pupil.

*NOTE: This fine book was sold at only 50 cents per copy through the Superintendent of Documents, but the supply has been entirely exhausted for several years and no reprinting is contemplated.

Another method, which we have not used, is to face a brightly lighted wall, move the instrument away from the eye until the position of maximum illumination is found and then measure the distance from the eye lens to the pupil of the eye for the arbitrary eye relief.

The diameter of the objective lens is given for each sample in inches and in millimeters. We measure them with both rules and include all the exposed glass, regardless of inside diaphragms, but not including any part of the lens covered by its holder, cell or locking collar. Because some, if not most, literature on scopes quotes makers' full diameters of the component lens itself, our measurements are smaller in many instances. We decided on this course because the effective diameter (clear, unobstructed aperture of the objective) is still smaller in some samples. This discrepancy is recognized in our report by our figures for the diameter of the exit pupil of each sample. When a diaphragm cuts out any light around the rim of the objective lens the effective diameter or remaining clear aperture is reflected in the resultant diameter of the exit pupil, because the latter is thereby automatically reduced proportionately. Our own pupil diameters also are often smaller than the figures usually quoted, but we think they are relatively fair to all samples, which were measured uniformly.

We deliberately left out any reference to relative brightness of the image, because we had no means of concisely gauging it which would be fair to all samples. Its practical effect is psychological rather than physical and the smallest appreciable differentials cannot be conveniently measured. Nor can these small degrees be practically set down in arbitrary values, such as, for example, so many illumines per centimeter per magnification per angle of field per relief, etc. Relative brightness, as usually quoted, is merely the square of the millimeter diameter of the exit pupil, and any reader can easily multiply the exit-pupil figure by itself if he wishes. We have indirectly indicated the relative brightness of the image, because it is involved in our classification of the definition. Those samples which were not "good" in the matter of definition were usually deficient in light transmission to the same slight degree.

We did check the intensity of the light transmitted by many of these sample scopes, but deemed our results insufficiently conclusive to warrant their inclusion in our report. Our test was for relative loss of light, as we believe up to 1% efficiency of transmission is lost to absorption by the lenses and up to 10% is lost through surface reflection. Recent scientific developments and demonstrations support our belief. A plate of glass which passed some 92% of light had its efficiency of transmission increased to some 99% by an auxiliary, transparent, surface film only several molecules thick. Apparently the remaining fraction of 1% of lost efficiency was due to absorption. The essential condition here is the microscopic thinness of the surface film which must equal just one fourth of a wave-length of light to blank out or neutralize surface reflection.

Through observation of their fields, side by side, scopes can be compared for relative image brightness, without measurement, by quite simply and indefinitely noting that this image seems slightly or somewhat more brilliant than that one. Or the ground-glass screen of a direct-focus camera can be adjusted to reflect the scopes' image for direct study and comparison. We tried to get definite values for a practical rating of comparison by using a photo-exposure meter in connection with apertures of various different sizes, each selected to conform with the diameter of the exit pupil of the particular scope being tested.

Our illumination was made uniform by directing the light of two lamps, which totaled 600 Watts, against a smooth but non-glossy, lightly-tinted surface, from a distance of two

feet. Our shield was 1 meter from the extended surface of this light source. Our light gauge was used at this same distance with and without the scope, the respective deflections of its needle being noted and compared to determine the loss of light through the instrument. Since those exit pupils which were directly involved in this test ranged from 2.5-mm. to 9.5-mm., we had corresponding apertures in our opaque light shield ranging from 3-mm. to 10-mm.

It happens that these apertures correspond in diameter with the stop apertures of cameras ranging from f-45 to f-16. Without the scopes our light source gave ratings with these shield apertures ranging from 25 seconds for the smallest (3-mm. or f-45) to 3 seconds for the largest aperture (10-mm. or f-16). When the scopes were placed ahead of the light-gauge the time of required exposure was increased from 166% to 500%, indicating a considerable loss in light intensity with the same aperture.

The low-power scopes (1X to 2½X) required from 12 to 20 seconds of time with an aperture which called for only 4 seconds without the scope. The next lot (2½X to 4X) required from 15 seconds to 30 seconds with an aperture which required 8 seconds exposure without the scope. The others tried (6X to 15X) required from 12 to 15 seconds under the latter condition. These results are interesting but only indicative of some loss of light through scope sights. As previously explained, they are not in any sense conclusive.

Maximum and Magnum. Some will have it that the old Hoffman 7-mm. Super Express employed an enlarged .280 Ross case, but we are assuming it was a belted case. One E. A. Hofe, who was trained in the Brenneke organization, gave some optimistic dope in Krugel and Schrot a few years ago about this old 7 x 73-mm. Super Express cartridge, which, at least, is interesting. Its recounting here may be particularly so. The charge was said to be 78 grains of special powder and the Magnum-Mausier action and rifle was proof fired at 90,000 pounds. The cartridge case was 73-mm. long. The 5-shot groups were 21½ inches at 200 meters and 4½ inches at 300 meters.

Berlin Karlsruhe Industrie Werke, A. G., a successor of D.W.M., are believed to be responsible for some additional dope on this cartridge, or a very similar load, using a 170-grain, boat-tail, paraboloidal, soft-point bullet with a nickle-plated jacket and 36-mm. long. This used a belted rimless case and non-corrosive primers with a progressive N.C. powder at a mean pressure of 34,000 pounds. It was used in a tight-chamber, 27½-inch barrel of Boehler, high-pressure, special, compound steel. It was also close-bored and polished very highly. The gun weighed 9 pounds and was said to have the recoil of a deer rifle. The 5-shot groups were 1 to 1¼ inches at 100 meters, and the muzzle velocity was given as 3360 f.-s., with 3160 f.-s. remaining at 100 meters and 2970 f.-s. at 300 meters; a time of flight of .3166 seconds and a trajectory of 3¾ inches over 300 meters.

In 1937, Mr. Koenig told me about a 7-mm. Maximum cartridge, which Brenneke was developing from the 9.3 x 64-mm. case, which does not require the long Magnum-Mausier action. With a new powder, Brenneke hoped to achieve 3600 f.-s. m.v. with a 150-grain 7-mm. bullet. He then would cut the charge a couple of grains for tropical use and give the standard cartridge 3200 or 3300 f.-s. He did not achieve his ambition, but by the middle of February, 1938, I learned, through Mr. Koenig, that Brenneke now was aiming at 3500 f.-s. with a 147-grain bullet in this new 7-mm. Maximum cartridge.

Before the end of April I had a report on two weights of bullets in this Brenneke rifle, one 31.5-mm. long (1.24 inches) and one 37-mm. long (1.46 inches). The 150-grain bullet put 10 shots in 3½ inches at 200 meters, and the 170-grain bullet shot into 4 inches, center to center.

Although this latter bullet (nearly 1½ inches long) put 9 shots in 3¼ inches, Brenneke was not satisfied to accept the consistent flier and decided to quicken the rate of spin by increasing the twist of rifling from 1 turn in 8.67 inches to a pitch of 7.98 inches.

For custom-built sporters or fine high-grade sporting rifles English rifle-making firms will guarantee 1½-inch five-shot accuracy at 100 yards, or better. The Brenneke standard of 4-cm. at 100 meters, and better than 10-cm. at 200 meters for sporting rifles, is as fine, or slightly finer, it being equivalent to 1½ minutes or better than 1½ inches at 100 yards and around 3 inches at 200 yards. Mr. Koenig told me that his Brenneke rifles would do this. One was an 8 x 64-mm., the ballistic equivalent of the .300 H. & H. magnum. The other sporter was the 9.3 x 64-mm., with 302-grain bullet at 2523 f.s. m.v., which just failed to make the highest target-rating of accuracy by a single millimeter. The case of this latter cartridge is necked down in making the new Brenneke 7-mm. Maximum.

In January 1938 some news about this cartridge leaked out, although my own dope was held in confidence until this month when I received a release for publication. That early dope indicated that an m.v. of 3450 f.s. had been achieved with a 145-grain bullet. Even in a chamber so tight that there was no neck expansion and no resizing necessary for reloading, there were no signs of high pressure and no sticking, not even an extractor mark. Compare this with the 57,000 pounds pressure of the .280 Halger when loaded to these identical ballistics.

The 9.3 x 64-mm. necked down to take this .285-inch bullet, holds more powder than the .300 Magnum, and yet the case is only .04 inch longer than that of the .30-06, which is about 63-mm. The groove diameter was .2854-inch, slightly larger than the bullet. The 20-shot accuracy was 1.31 inches, presumably at 100 meters.

Some of the dope now released is a graphic illustration of a penetration test in poplar blocks, which shows how all four standard types of 7-mm. expanding bullets penetrated more than 11 inches; two of them, more than a foot; and one, about 19 inches. This latter was the 172.5-grain, H-jacket bullet with lead point. Its remaining weight was about 117 grains. The next deepest was 13.4 inches, made by the 170-grain Brenneke-Torpedo-Universal bullet with lead point. Its remaining weight was 98.6 grains. Next was 12.4 inches, made by the 154-grain Strongjacket bullet with lead point. Its remaining weight was 88 grains. Finally, the 177-grain Brenneke-Torpedo-Universal bullet, which tore the greatest hole and penetrated 11.7 inches of poplar wood. Its remaining weight was 88 grains.

The translations from German and the measurements from the chart are my own. My figures, translated from their metric equivalents, may not be exact, but they are relative. Apparently (from my translation) the (Händel) H-jacket bullet and the similar new Brenneke Torpedo bullet became known (in German periodicals) in 1933, although brought out with a different form of nose in 1926. The length of the Brenneke Torpedo bullet is 36-mm. in the flat-base model and 38-mm. in the rounded-base model. Both have a wire point (probably bronze) imbedded in their noses to a depth of about ⅜ inch. When I called on Bill Krippner he showed me some imported bullets of this type which were probably the same thing. They were quoted at 38 cents each, wholesale, and I did not get any of them. The charge of powder used in the penetration test reported above for the 7 x 64-mm. Maximum cartridge was 3.75 grams (57.75 grains) of Rottweiler No. 1.

The last news from Mr. Koenig gives the present status of this 7 x 64-mm. Brenneke cartridge. Because the new powder, on which he had depended for his ultimate ballistics, was not forthcoming, except in insufficient laboratory samples, Brenneke has temporarily dropped the project of the 7-mm. Maximum load and is now loading a 146-grain bullet to 3100 f.s. m.v., which duplicates the ballistics of the old .280 Ross 145-grain H.C.P. cartridge. Instead, Brenneke is bringing out an 8 x 64-mm. Maximum

cartridge, for which suitable powders are available. This 8-mm. develops practically 3100 f.s. m.v. with a 186-grain bullet.

Mr. Koenig says that the only Magnums which have retained their popularity are the .375, the .350 Rigby, the .318 Westley & Richards and the old Ross. Also that the cartridge of today on the Continent is the 7 x 64, which has replaced the old 9.3 x 62-mm. and 9.3 x 74-mm. cartridges, and that the 9.3 x 64-mm. has made a great reputation in Africa, its 302-grain bullet being the only expanding type that will work on everything including buffalo and rhino. He says shooters are still waiting for a promised 260-grain speed bullet, expected from R.W.S. He adds that he gave up the .300 Magnum long ago because no bullet was available which would stand up under its velocity.

Speaking of Magnum bullets, I have some fine samples made for the O.K.H. .285 Duplex which I shall refer to as "Y" bullets because the expert maker does not want any publicity at this time. These are made from .30-caliber factory bullets including the M1 Service, Western C. Co. 180-grain and 220-grain, and from the former W.T.&C.W. .280 Dubiel. They have fine long points, boat tails, tapered bore-riding sections and bore-sealing driving bands. These bullets require high-velocity or Magnum loads and a quick twist of rifling for long-range stability, because they have 12-caliber heads and are very long per caliber. In .285-inch diameter, the boat-tails are nearly 1½ inches long and the flat-base is nearly 1½ inches.

There is a particularly interesting sample which has a very sharp wire point for splitting the air. It is more than 1½ inches long and it has a beautiful shape for long-range work. These bullets have made fine groups at 600 yards. We hope to try some soon in our .270 Winchester, but no further information can be given on them at this time.

Speaking of wire-point bullets, another example is the experiment of D. Barrett, who lives down in Natal, South Africa. He uses M1 Service bullets and I.M.R. powder No. 1185 in his .30-06 cases, which should be interesting to N.R.A. members. Trained on the .303 British Service caliber, he realized that the flat-base Mark VII bullet is long enough to weigh 196 grains although it actually weighs 174 grains, because there is a gap between lead-alloy core and the tip, beneath the F.M.J. jacket, the hollow nose being filled with an aluminum tip. Incidentally, this completely-enclosed hollow does not tend to yield or buckle upon impact even when not filled with fiber or aluminum to keep the core in its proper place.

D. Barrett decided to try the same thing with our M1 Service bullet. He melted out the lead cores, dropped aluminum balls into the point part and refilled the jackets with lead. This reduced the original 173-grain boat-tail to 150 grains weight. Driven by a charge of 50 grains No. 1185, these refilled bullets did not tip, up to 400 yards. His other method was to use an aluminum wire in the point, after flattening the latter about ⅜ inch and drilling a hole with a No. 32 drill deeply enough to reduce the weight to 146 grains. These holes then are filled, by inserting an aluminum wire of snug fit, and the short protrusions are sharply pointed. His charge of 50 grains No. 1185 gave 3½-inch to 4-inch groups at 200 yards and no signs of tipping. This load caused these reconstructed bullets to break up well upon impact.

Barrett's M-70 Winchester is the Target grade, but with sporting sights. In the tropics he can use as much as 52.0 grains of 1185 powder behind these 150-grain altered bullets. He has tried 53.0 grains but then pressure evidence began to appear. Using 51 grains he tried them up to 800 yards and found very little actual change in sight adjustment was necessary.

Barrett gave up his first .30-06 because, after trying it on everything from buffalo to duiker, he decided he was losing altogether too much game. He has killed over 2000 head of game, including 56 buffalo, with the 174-grain Mark VII bullet in the .303-British rifle. The characteristic effect of this bullet was to glance on large bones and keyhole. However, Barrett killed seven buffalo in fifteen minutes with this .303 British, which he thinks, and which I think, is

a record. Upon my recommendation he got his present Target-grade M-70 Winchester; that is, when he finally decided to give the .30-06 caliber another whirl. At that time I also suggested the tough and very accurate Peters 225-grain belted-bullet for short-range work in the brush, and I believe Barrett found these bullets accurate as well as adapted for the particular job.

The British Service cartridge Mark VII (.303 British) has a flat-base, pointed bullet, with a lead-and-antimony core and an aluminum tip enclosed within the Cupro-nickel jacket. It is 1.28 inches long with a cylindrical diameter of .312 inch. Its S.D. is .255. The charge of 37.5 grains Cordite gives it an m.v. of 2440 f.s. in the 25-inch Service barrel. The pitch of rifling is one turn in 10 inches and the chamber pressure is 43,680 pounds. These mean figures are given here because of Mr. Barrett's success with it on South African game. The Western Cartridge Co. loads it with an open-point, 174-grain bullet to 2460 f.s. m.v. which develops 2340 ft.-lbs. energy. Dominion C. Co. loads a Pneumatic and a Copper-point bullet, both of 180-grain weight and at 2560 f.s. m.v. There is of course also the 215-grain Mark VI cartridge and its factory, expanding-point equivalents at about 2060 f.s. m.v. and 2028 ft.-lbs. m.e. To all intents and purposes this is practically the .30-40, or at least the ballistic equivalent of the familiar .30-40 Krag.

Our first small-caliber Magnum, above the .220 Swift and .256 Newton, is the rimless, belted, bottle-neck .275 Holland & Holland loaded, by the Western C. Co., with a 175-grain, boat-tail, expanding bullet to 2690 f.s. m.v. and 2810 ft.-lbs. It has 2450 f.s. remaining after the first 100 yards of flight. This bullet has a drop over 300 yards of about 29 inches, the midway trajectory-height being about 7¼ inches.

We hear more about the converted form of this cartridge (.276 Dubiel Magnum) and very little of that. This .276 Magnum employs the same case with a more-gently-sloping shoulder taper, however. It is a "wild-cat" cartridge, being only custom loaded. The usual ballistics with the 175-grain bullet are 2800 f.s. m.v. At present W.T.&C.W. have a fine, pointed, 160-grain, 7-mm. bullet with which G. & H. hope to revive or sustain the .276 Magnum. It should permit appreciably improved ballistics, especially for long-range accuracy and game shooting.

The .300 H. & H. Magnum, as loaded by Western-Winchester, is becoming more popular for game shooting in the M-70 Winchester Sporter and for long-range target work in the Niedner bull gun as well as in the Winchester bull gun. The factory ammunition is loaded with 180-grain and 220-grain expanding bullets and with a full-patch 180-grain boat-tail for target work. Both 180-grain loads develop 3060 f.s. m.v. and 3743 ft.-lbs. m.e. The remaining velocity at 100 yards is 2849 f.s. for the target bullet and 2815 f.s. for the hunting bullet. The 220-grain bullet is given 2730 f.s. m.v. with 3640 ft.-lbs. m.e. Its remaining velocity at 100 yards is 2507 f.s. Mr. Koenig told me his Pope barrel with 12-inch twist in .300 Magnum caliber handled the 220-grain bullet without any apparent wobble over sporting ranges.

An interesting report recently came from Mark Cooper, who joined up with Sellers, Hamby and Fricks for some long-range, 30-caliber target shooting. Sellers had a possible with 13-V's in the Wimbledon Match at Camp Perry the year Ben Comfort won it with the .300 Magnum, Sellers being runner up (by totaling the same as the winning score) and also winner of the Crowell match.

Sellers had a .30-06 bull gun and Fricks had a Model-70 Winchester bull gun in the same caliber. Sellers' best load for long-range is 52.9 grains of No. 1147 with unselected M1 service bullets, which gives the same results as the Western Match load in his .30-06. Originally he used 52.4 grains of powder, but he has increased it .5 grain to compensate for a little throat erosion which has developed.

Charles Hamby had a new Model-70 bull gun in .300 Magnum caliber. Cooper's .300 Magnum had a heavy 28-inch Niedner barrel. On this

day Hamby beat his own Magnum with Cooper's Magnum. Fricks and Sellers beat both Magnums with their .30-'06 bull guns. Hamby fired some five different loads in the .300 Magnum at 600 yards. The impact of the Winchester make and Western make were the same as that of the handloads, but the Remington make landed 20 inches higher, which is quite some difference; 3.18 minutes difference.

As reported last month, Cooper's handload in the .300 Magnum was 62.0 grains of L.M.R. No. 15½ powder behind the 173-grain boat-tail Service bullet. He also used some new ones, of 58.0 grains L.M.R. No. 4064 behind these bullets, which had about the same impact at 600 yards. His Lyman mounts are 10 inches apart, and he had to elevate to 98 for 600 yards from the 100-yard zero of 64. The Western Match required an elevation reading of 96 at 600 yards and of 146 at 1000 yards. On the usual 7.2-inch mount centers add only ¾ as much to your 100-yard zero, or 23.8 half-minutes to 600 yards and 59.0 half-minutes for 1000 yards. For 6-inch mount-centers add to your 100-yard zero just ¾ of what Cooper added to his 100-yard reading for either greater range. Cooper uses F.A. No. 70 primers.

Incidentally, we have another good load from Mr. Trone, the local N.R.A. member who, as was reported last month, has a finely-accurate light-weight sporter in .300 Magnum caliber. It is a standard grade M-70 Winchester. His new load is 58.0 grains of No. 4064 powder behind the Remington 150-grain bronze-point. He uses W.R.A. No. 120 Stayless N.C. primers. The new Ideal Handbook (No. 33) lists the No. 35 Winchester primer without definitely classifying it. Presumably it is the old 35 N.F. primer. If it is, it would be a fine one for the .300 Magnum and other Magnums, because the old Winchester 35 N.F. was the mother (1917) of the F.A. No. 70 and had identical characteristics.

Our biggest Magnum and the heaviest American standard load (above the .35 Newton) is the .375 Holland & Holland Magnum, loaded by Western-Winchester, with 235-grain, hollow-point, 270-grain soft-point and 300-grain soft-point bullets. Besides the Model-70 Winchester bolt-action and imported rifles, custom-built sporters are available from Griffin & Howe in this caliber. The 235-grain bullet is given 2870 f.-s. m.v. and 4300 ft.-lbs. m.e. with 2534 f.-s. and 3352 ft.-lbs. remaining at 100 yards. The 270-grain bullet is given 2720 f.-s. m.v. and 4438 ft.-lbs. m.e. with 2469 f.-s. and 3657 ft.-lbs. remaining at 100 yards. The respective figures for the 300-grain bullet are 2563 f.-s. m.v. and 4176 ft.-lbs. m.e. with 2317 f.-s. and 3577 ft.-lbs. at 100 yards.

For the .375 H. & H. Magnum the former duPont recommendations called for a seating depth of .45 inch and an overall cartridge length of 3.60 inches with the 300-grain bullet. When so seated the maximum load of 4064 powder behind this bullet was 63.0 grains which developed 2450 f.-s. m.v. in the standard 26-inch length of barrel. The minimum load was 56.0 grains which gave 2160 f.-s.

A few years ago, Mr. F. Mosteller tried L.M.R. powder No. 15½, Hercules Lightning and HiVel No. 2 behind all weights of bullets in the .375 Magnum. His best accuracy was obtained with the 235-grain bullet when using 70.0 grains of No. 15½. About the same impact and accuracy (2-minutes-of-angle spread) was obtained with 57.0 grains Lightning behind this bullet. He also used 65.0 grains of HiVel No. 2 which spread 3-minutes and landed on aim at 100 yards, or about 3 minutes lower than the other two loads with this bullet.

Equivalent loads behind the 270-grain bullet were 64.0 grains of HiVel No. 2, 56.0 grains of Lightning and 68.5 grains of No. 15½, all of which had the same strike at 100 yards. Behind the 300-grain bullet, Mr. Mosteller used 67.0 grains of 15½, 53.0 grains of Lightning and 62.0 grains of HiVel No. 2. In all the above loads he used the F.A. No. 70 primer exclusively.

More Dope on Elevations obtained with Western .300 Magnum ammunition in a Winchester M-70 bull gun supplementing those reported above. Groups for all three loads ran

from 2½ to 3¾ inches at 200 yards and verticals from 1¼ to 2½ inches, which indicates adequate accuracy. Elevations for this 28-inch barrel were started from absolute zero, obtained near the muzzle.

The 220-grain S.P. required 6 minutes at 200 yards, 8 minutes at 300 yards and 20 minutes at 600 yards. The 180-grain open-point sporting load took 5 minutes at 200, 7 minutes at 300 and 17 minutes at 600 yards. The 180-grain Full-Patch boat-tail target load needed 4 minutes at 200, 6 minutes at 300, 11 minutes at 500, 14 minutes at 600 and 27 minutes at 1000 yards. These figures, which I obtained, more than a year ago, from the late Capt. Crossman, agree closely with those obtained from Mark Cooper given elsewhere in the other article.

Warning. Gordon C. Boser has found an old Double Action Army revolver, .38 Long Colt caliber, whose chambers are bored straight through its cylinder. Such guns will accept the powerful high-pressure .357 S. & W. Magnum cartridge. If fired disastrous results may be expected. Don't try it!

Ordnance Nomenclature. Misled by the fact that the British employ the word "Mark" to designate the model or type of certain of their ordnance items (.303 British Mark VI and Mark VII) some of our contemporaries have publicly explained that the symbols M1, M2, etc., used by our own War Department are merely abbreviations of this same ubiquitous "Mark," which is not true. As applied to our own ordnance the letter "M" means only M and "nothing else but." In order to definitely clear up the matter with some authoritative dope, we applied to the source of origination and got from the Office of the Chief of Ordnance a very comprehensive reply, part of which is quoted as follows:

"Concerning the matter of ordnance nomenclature, the following is quoted, in part, from the approved recommendation of the committee appointed to consider the matter in 1925:

"a. That the designation of all ordnance items begin with the principal noun followed by the principal classifying adjective, then by the size or weight adjective, then by the type designation, then by the serial number of manufacture and then by the alternation numbers.

"b. That the various types developed experimentally be designated by a T number indicated by a capital T followed by an Arabic numeral indicating the number of the design which has been produced; that experimental modifications under any design be indicated by an E number followed by Arabic numerals indicating the numerical sequence of the experimental changes.

"c. That when an item of ordnance is adopted as standard for manufacture that it be given an M number indicated by a capital M and followed by Arabic numerals to designate the model or type; that alterations under this model or type be indicated by the letter A; that the serial numbers of the item begin at unity with each T number or M number and continue successively without regard to E numbers or A numbers."

"The system of nomenclature indicated in the foregoing has been in effect since 1925."

On Fine Knives—For several years I have been trying to find a hunting knife that suited me in every way. I bought several knives of different types and traded back and forth. Got some that were very good for one thing, but not for another. Some were good for sticking or cutting and for a general all-around camp knife some were all right, but for an all-around combination I was not perfectly satisfied.

One day last winter (1936-37) I was visiting some friends in the mountains along the North Fork of the Kings River in Fresno County, Calif. A friend of mine there had a knife that another man and himself had made, very nearly 30 years before, out of a file, and he had used it as an all-around knife ever since. It struck me as the best knife I had handled in years; I liked the feel and the hang of it the best. Well, my friend gave it to me and I brought it home.

One of the boys that I work with on the Los Angeles Fire Department told me about a man

that could make stainless steel knives with a temper that would hold up and with an edge on them that would keep longer than that on an ordinary hunting knife with a dozen sharpenings. I was dubious, for my experience with stainless steel knives was that they were all right for looking nice, but as to their temper, the less I would say the better. But I went along and took a look at the knives that he had on hand. I did not know so very much about steel, but I knew enough to know that I had found something worth while. I bought a French knife for home use and took it home and tried it out.

My wife and I both liked it very much, and its edge held up. So I got to thinking—since a man could not have an all-around hunting knife and skinning knife in one, why not have a combination of two knives; a hunting and skinning knife in one scabbard. A friend of mine had some elk horns, so I got one from him to make some handles, and I ordered two knives, a hunting and skinning knife; patterned after the knife made from a file that my friend had given me for the hunting knife.

The results were amazing. The hunting knife was an improvement over the pattern and was perfect; just what I had always wanted and had been trying to find for years. The skinning knife was a perfect, hollow-ground knife and perfectly shaped to suit me. Both were sharp as a razor. After they were made some sportsmen heard about them, and eight of them came down in a group to the maker, T. L. Anderson of 2773 Broadway, Eagle Rock, Los Angeles, Calif., to see the knives. They each took one and whittled on Jarrah wood (a wood that comes from Australia and is very hard) and then shaved the hairs off on their arms without any re-sharpening.

I cannot help but recommend Mr. Anderson very highly on his knife products, not only in the hunting set but also in knives of every description that the housewife uses as well as knives of other shapes and sizes. For a man that wants something that is fancy and still worth while this hunting set that I have with elk horn handles and tempered stainless steel blades will fully satisfy, and I expect it will last longer than my own lifetime and will be finished by somebody else. There are none to compare with these hand-made, hand-finished knives.—AUSTIN S. DOTY.

Rumors would have it there is in the approaching wind a .22 autoloading target-and-game pistol with outside hammer. The exposed-hammer model by a well-known maker is already made up in a working arm and could be placed on the market upon very short notice. Of course we already have the .22 Colt Ace and Service Ace, with exposed hammers, but none now on the order of the old 10-Shot Reising hammer model.

Another rumor promises the early appearance of a fine single-shot falling-block rifle with some novel modern features and adapted for any desirable rimmed center-fire cartridge now made as well as some new ones.

Metal Fouling. If you have a rifle which has a penchant for picking up metal fouling from jacketed bullets, carry a rod and brass brush to the range and scrub it out immediately after shooting. If you do this while the barrel is still hot, which is before the fouling sets itself solidly, the stuff will come out usually with little difficulty. If you wait too long you will have to use Winchester Crystal Cleaner, ammonia swabbing solution, or stronger (28%) ammonia. Do not get this stuff in the action, on blued surfaces, or on brass brushes or brass rods. Use it on a cleaning or scrubbing patch in connection with a steel rod.

.25-20 Single Shot cases, used for the .22-3000-Lovell and 2R-Lovell, are of two distinct types, of which the Winchester smokeless-powder-case is the better. It can be distinguished from the blackpowder case by the small clearance-groove machined just back of the rim around the head of the Winchester .25-25 S.-S. case.

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land Shooting Kits. Catalogue on
all shooters' accessories, 15¢, cradled
in first order. Free folders.

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1112 35th St., Rock Island, Ill.

TRADE DOPE

O. F. Mossberg & Sons, Inc., announce
some streamlining of old models including the
reduction of magazine-capacities, by one car-
tridge, in their shotgun models 83 and 85.
Most interesting are the new models, both .22-
caliber autoloading rifles.

The Model 51 holds 15 .22 Long Rifle car-
tridges, fed through a port in the right side of
the butt stock. It has a 24-inch round barrel
and weighs 7 1/4 pounds with sling swivels, target
sights, front and rear, beaver-tail forestock and
cheek piece.

The Model 50 has a plain pistol-grip stock of
the same length, but without wood-swells or
swivels, a gold bead front sight and an open
rear sight. It weighs 6 3/4 pounds, and is very
similar to the new Winchester M-74 autoloader
in general appearance. Both models have a
straight-line feed, like the Winchester, which
latter holds 20 .22 Short cartridges.

Both Mossbergs have an overall length of 43 1/2
inches and a takedown length of 32 inches. Both
handle either regular or high-velocity .22 Long
Rifle ammunition, dry or lubricated, which is
unusual for an autoloader.

Some individual Model-63 Winchester auto-
loaders (designed for the high-velocity ammu-
nition) will do this, but most of them will perk
best with Lesmok target loads and high-velocity
loads. I tried the pilot model of the current
Marlin M-A1 autoloader, of the bolt-action type,
at the factory a couple of years ago, with mixed
loads, and it perked perfectly. The Savage 6-A
autoloader, of this type, handles both types of
ammunition but generally perks best with the
Super-X or Super-Speed ammunition as does the
M-63 Winchester. The Remington M-241
perks well with regular Kleanbore ammunition.

A. E. Warner & Sons, 2512 Pleasant Valley
Ave., Altoona, Penna., make good gas check cups
for lead-alloy bullets, in case you are interested.



NEW AUTOMATIC DUPLEX

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with perfect let-off
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action. It's the only
one of its kind.
In your M-37 Remington (see March Dope flag) or your
52 Winchester—price \$27.50 each. The complete rifle must
be sent to me; write for installation date. Specialize in
tool-making and gunmaking.
L. G. THOMAS, 1548 Ford Street, Shreveport, Louisiana

.22 Short Auto Winchester. A new auto-
loading rifle has come down the pike. This time
from Winchester and a butt-loading (through a
port in the side of the stock) tubular magazine
hammerless (enclosed bolt-action) with one-piece
stock. This new Model-74 sells for \$16.85 with
open sights; for \$17.65 with peep sight. It is,
wisely, made for the cheap little .22 Short car-
tridge, of which it holds 20 at one loading.
Adapted to both regular and high velocity loads.
There is also a Gallery Special model which
holds 15 cartridges of the same caliber.

The magazine is similar to that on the M-1903
and M-63 Winchester autoloaders which are
made, respectively, for the .22 Winchester Auto-
matic and .22 Long Rifle cartridges. Bolt as-
sembly easily removed for cleaning. New type,
sliding-bar, cross safety, on top of receiver, locks
action against firing. Easy and quick takedown
by loosening one locking screw (flush with wood
requiring screw-driver). Overall is 43 3/4 inches;
average weight 6 1/4 pounds. Stock designed for
plinking and to fit the average person. Dimen-
sions: 13-7/16 x 1 1/2 x 2 1/2 inches. Plain pistol
grip and full forestock grip. Barrel, 24 inches
and round, tapered from about .575 inch at the
muzzle to about .810 inch on our sample. Neat
cylindrical receiver 1 inch thick and 8 1/2 inches
long. Small trigger-guard screwed on outside
of plain walnut stock. Finish, blued. Blow-
back action. Sample very neat and trim. Handles
fine. Not fired as yet.

Harold P. Wasson, maker of Adjustable
Tip-Up Shooting Apertures and slip-on protectors
for Colt, Smith & Wesson and High Standard
front sights, now makes blinders for the pistol
shooter. At Camp Perry and other ranges, pis-
toleers are seen in action with cards, tags and
paper shields around their glasses to avoid irritat-
ing side rays of light. Wasson Aperture Shield
Sets are made of black opaque material to match
his shooting apertures; they are light and thin;
they can be trimmed to fit the face with com-
fort; they are made for different types of shoot-
ing glasses; they can be used with or without
shooting apertures; and they do shut out all
extraneous side lights from any angle when
properly fitted.

A. C. Cornelison of Scottsboro, Alabama,
makes jack-knives to order of Chrome-Vanadium
razor steel. Drawings and detailed specifications
are required, and the price starts at \$10.00. The
mill-annealed steel is hand forged around 1300°
F., ground and finished, heated to 1450° F. and
cooled in air, then reheated to about 1300° F.
and quenched in brine, followed by reheating to
1450° F. and hardened in oil. After this final
hardening they are tempered according to the
customer's specifications, hard, medium or soft.
Old pet shanks, handles or frames can be fitted
with a Cornelison blade to order. They are all
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MAPLE SYRUP

ST. REGIS MAPLE CO., St. Regis Falls, N. Y.

Robert C. Geesey, Bureau of Police, York, Pa., has fully developed an Anatomical Silhouette Target. As the name implies, this target shows, in outline, human organs which are in natural size and anatomically correct as checked by a prominent surgeon. Because it directs an officer's attention to the vital region and accurately places the most vulnerable areas, I think every police club or guard group or law-enforcement organization should send 10 cents to Bob Geesey for one of these sample life-size targets. Send your dime (coin) to 134 South Duke Street.

They are lithographed, on specially-developed target paper, non-glaring, jet-black areas and clean-cut lines for accurate scoring. One special feature of this paper is that it breaks clean with the minimum amount of tearing regardless of bullet used. The body area is black with organs shown in white outline. Heart is marked 5 as are the main arteries (spinal column) and pancreas. Lungs are marked 4, liver and intestines 3, kidneys and spleen 2. Bone structure (pelvic, arms, shoulders) and the minor arteries (outside vital area) and hands are gray. Muscles are white, and indicated by the thin black outline of the figure. Facial features are omitted, except the ears. Reason for this is to detract attention from the head to the greater area offered by the body for effective results. Gray bony structure is intended for special scoring graduations added by the individual police instructor. The life-size man-figure (21-inches wide) is 41 inches from the top of the head down to the crotch, the hands extending below the bottom line. The paper size is 28 x 49 3/4 inches. This Geesey Anatomical Silhouette Target will probably be tried in the regular matches this year at Camp Ritchie or Camp Perry. Prices in quantity at present are on par with those for the Colt Silhouette Man Target.

R. S. Truitt, as advertised, furnishes plans for making at home a practical powder measure. Cost, 75 cents. At \$2.50, complete, he will include with the drawing the necessary parts as well. For those who can assemble models this makes a very cheap powder measure.

Leslie M. Lindahl, Central City, Nebraska, has established a service to reloaders in the central area of the country, all prices being F.O.B. his town without packing charges. He lists duPont I.M.R. powders at \$1.60 per pound canister and all pistol powders at \$1.00 per 8-ounce canister, Hercules Unique (4-lb. keg) and other Hercules rifle powders at \$7.50 per 5-pound keg. Primers are 36 cents per 100 or \$3.50 per 1000, except shotgun primers. Other items are Sisk bullets, Smith Wotkins-Morse bullets, W. T. & C. W. bullets and all regular makes, reloading tools and accessories and shooters' books. Prompt service promised; 90% shipped within 24 hours.

Joe Goss III. Maker of Goss sights has been ill for many weeks and is still confined at his hospital. Stricken while launching his new 1939 line, he had to withdraw his ad. Sight orders should be withheld until his complete recovery has been announced.

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Zeppelin Arms Co. have a national circulating library of shooters' books which has long been needed. A few years ago we proposed such a library service in the Dope Bag columns, but nothing came of it, to our knowledge. The Zeppelin service charge is about 0.1 per cent of the purchase price; minimum rental 3 cents per day for books selling at \$1.50 to \$3.00. Daily rentals range upwards to 15 cents for the two volumes of The Modern Gunsmithing by Jim Howe. See the Zeppelin ad.

Paul Jaeger, gunsmith of Philadelphia, sends in a neat 16-page catalog of gunsmithing supplies, which also lists Zeiss, Hensoldt and Ajack sighting scopes and Jaeger, German-type top mounts and bracket mounts. There are double-set triggers and the Jaeger single-set for bolt-action rifles. Parts for the 1898 Mauser, a vertical-bolt, hammerless, single-shot action with set-trigger, speed-lock and short lever-throw. Sights, buttplates, sling swivels, sling straps, Buffalo-Horn tips, stock blanks, rough-turned stocks and machine-inletted Bishop stocks. Most interesting is the list of chamber reamers for shotgun, rifle and revolver, for roughing and finishing. The stock list of finishing chamber-reamers for rifles runs from the .22 Long Rifle to the .375 Magnum. Prices range from \$3.25 to \$7.75, but the most common figure is \$6.90 per caliber. Roughing reamers are all \$6.00.

E. C. Bishop & Son have an excellent heavy target stock with full beaver-tail fore-end and Tenite tip, full and large pistol grip with Tenite cap and full-size target butt with Tenite buttplate. The large concave cheek piece is rolled in shape to a flat top which is very comfortable. For steady holding and comfort in all positions it is equal to the best stock we've ever tried. The cheek piece is better than any previously tried and it seems to fit well every type of face.



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Groups of figures are computed as one word. Spell out all descriptive words; abbreviations may lead to serious misunderstandings and thus impair the effectiveness of your ad. Box number or blind ads not accepted. Please give complete name, so as to facilitate the proper issuance of money-orders. All advertisements must be accompanied by cash or they will be disregarded. Final closing date is the 5th of the preceding month. Please print all advertisements plainly—we cannot be responsible for errors due to illegible writing.

In describing the condition of guns advertised the following standard phrases must be used: *Perfect* means factory condition. *Excellent* means new condition, implying negligible amount of use. *Very good* means practically new condition, implying very little use, resulting in no appreciable bore wear and very few and only minor surface scratches or wear. *Good* means moderate use with some finish worn off, and only moderate bore wear with no pits and nothing worse than a little roughness in the bore. *Fair* means reasonably hard service, reasonable wear inside, and nothing worse than a few very minor pits in the bore, implying the gun is practical and sufficiently accurate for hunting purposes. *Poor* means marred appearance and pitted or badly worn bore.

THE MEMBERS EXCHANGE

This section provides a quick, inexpensive means for disposing of guns and accessories no longer needed, or for the purchase of more suitable similar items. We urgently request that a full description be given of every article offered, and its condition (see complete instructions above), for transactions of this sort must be based entirely on good faith and mutual satisfaction. Deliberate misrepresentation will of course result in immediate expulsion from N. R. A. membership.

FOR SALE

The TWENTIETH CENTURY GUN. A fine 12 gauge English 5 1/4 lb. ejector with a new system of taper boring and using a 2" shell now made by Remington. It develops more velocity than the regular 2 3/4 with a fine pattern and light recoil. The most important shotgun development in recent times. Liberal discount to regular dealers. New catalog ready. Stamp please. Kimball Arms Company, 220 Cambridge Road, Woburn, Mass. **tf**

RIFLEMAN, last 10 years complete, 1928 to 1938, inclusive, \$14.00. Frank Pickart, Hoven, So. Dak. **4-39**

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ZEISS 6x30 Binoculars, \$35.00. Also 8x50 outside view optically very good, \$50.00. Fecker 1-1/4 scope 10X, 19 inches long, \$45.00. Draw tube spotter 1 1/4 objective 33X, \$15.00. Draw tube Zeiss prismatic spotting scope, 2 1/4 objective, very good, \$65.00. Special custom built B&L 3 1/2 inch draw tube prismatic telescope 36-48-72 power, \$250.00, excellent, cost \$400.00. Will refund on any above within five days if unsatisfactory. A. Hubalek, 1167 Myrtle Ave., Brooklyn, N. Y. **4-39**

HORNET 54 Target Model, medium heavy barrel, 17A and 48WJS, excellent, \$60.00. J. W. Reeder, Cairo, Ohio. **4-39**

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BEAUTIFUL Rocky Mountain Goat Head, finest taxidermy, unusually fine specimen, (photo free), \$150.00. Lyman 15X Super Targetspot, nearly new, \$55.00. Like new \$45.00 Gibson Mandolin, \$20.00. Excellent Bausch & Lomb 10X Binocular, \$55.00. Hensoldt Zielyt 2-3/4X Hunting Scope, optically as new, \$30.00. Fine, hand mounted, coyote fur rug, \$20.00. Pair finely colored elk teeth, \$5.00. Excellent \$8.00 Coleman Cane Stove, \$5.00. WANT Springfield, 70-270. Frank Zlatnik, Twin Falls, Idaho. **4-39**

COLT D.A. 44-40 Frontier, excellent, \$20.00. Colt D.A. 44-40 Frontier, good, \$16.50. Colt 45 A.C.P., very good, \$20.00. S&W 45 '17, good, \$15.00. Orgies 380, good, \$7.50. Remington 20 ga. Automatic, excellent, \$30.00. Krag Rifle, good, \$12.00. Goodell-Pratt Modelmakers Lathe, \$22.00. R. L. Heald, Mead, Nebr. **4-39**

MAUSER .22 Target Rifle, deluxe model M.S. 250, Italian Walnut, equal to factory new in and out, sacrifice \$55.00, cost \$95.00. R. Patzig, Morton Grove, Ill. **4-39**

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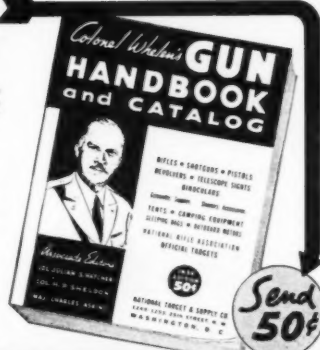
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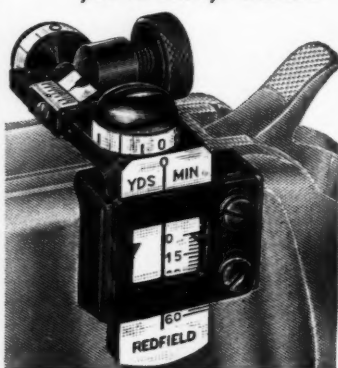
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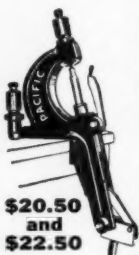
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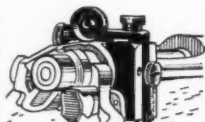


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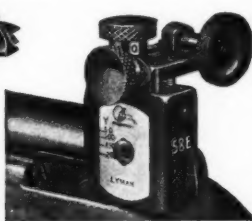
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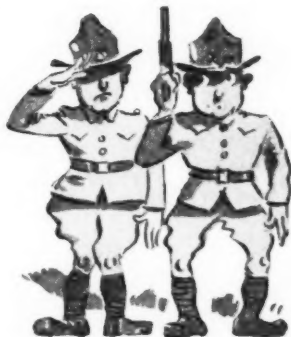
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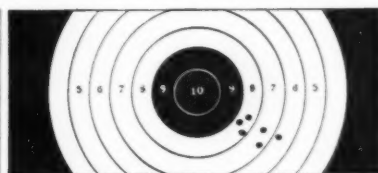
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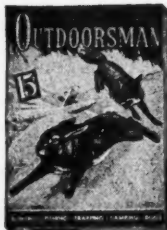
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9 Firsts at Fort Hayes for SUPER-MATCH and Xpert

Western SUPER-MATCH and XPERT held the spotlight at the Fort Hayes Mid-West Indoor Matches, Columbus, O., Feb. 25-26.

Winners with SUPER-MATCH were Stan Grooms, Grove City, O., whose 300 plus 270 10's in the Tewes Match topped several perfect 300's. Eugene Huff, Coshocton, O., was second with 300 plus 262 10's. Larry Wilkens of Cleveland triumphed in the 3-position Iron Sight Championship with 287. Helen Jenkins of Columbus captured three events: the Women's Match, score: 278; the Junior 3-position, score: 277;

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Dept. D-25, East Alton, Ill.



and the Junior prone, score: 199. Capt. D. R. Maxwell of Columbus won the 3-position, iron sights American Legion, score: 277.

Winners with XPERT were Arthur Burtcher of Toledo, who took the Offhand, score: 193, and the Fort Hayes Special, score 292. John B. Brown of Akron won the Secretaries' Match, score: 299, prone. Three of the first four places in the aggregate were won with WESTERN. Write for the Western Ammunition Handbook that tells why you can lay 'em in with XPERT and SUPER-MATCH!



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The well-known Chicago shooter, John B. George, relied upon SUPER-MATCH accuracy and won 3 firsts, a second and a third at the annual Chicago Navy Pier 26 to 25-yard matches, February 26 to March 5.
1st.—25-Yd. Aggregate, iron: 948
1st.—20 Shots Standing, iron: 194
1st.—Four Position, iron: 1521
2nd.—Grand Aggregate: 2106

GROOMS


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1st—20 Shot Position, 1521
1st—Four Position Aggregate: 2106
2nd—Four Position Aggregate: 2106